# 9. Quality of Service

Introduction

This section summarizes various kinds of service quality data filed by certain incumbent local exchange telephone companies for calendar year 2002. The data track both the quality of service provided to retail customers (business and residential) and to access customers (interexchange carriers).

The Federal Communications Commission (FCC or Commission) does not impose service quality standards on communications common carriers. Rather, the Commission annually monitors data submitted by incumbent carriers that collectively serve about 90% of the nation's access lines and periodically publishes a report on quality of service trends.[1] The data contained in this section provide a summary of recent quality of service indicators including customer-initiated trouble reports and company responses. This section publishes information about company performance and statistics about company responsiveness to network failures and associated consumer complaints. We include, in the tables following the text, comparative data about various service parameters including installation, maintenance, switch downtime, and trunk blocking, along with associated customer perception data.

Background

At the end of 1983, anticipating AT&T's imminent divestiture of its local operating companies, the Commission directed the Common Carrier Bureau[2] to establish a monitoring program that would provide a basis for detecting adverse trends in network service quality. Throughout 1985, the Bureau modified the service quality reporting requirements to reduce unnecessary paperwork and to ensure that needed information would be provided in a more uniform format. The data were received semiannually, typically in March and August, and formed the basis for FCC summary reports published in June 1990 and July 1991.

With the implementation of price-cap regulation for certain local exchange carriers, the Commission made several major changes to the service quality monitoring program beginning with reports filed in 1991. First, the Commission expanded the class of companies filing reports to

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1 The last report was released in January 2003, which covered data for 2001. *See* Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission, *Quality of Service of the Local Operating Companies* (rel. Jan. 30, 2003). This report can be found on the Commission's website at www.fcc.gov/wcb/iatd/stats.html under the file name QUAL02.ZIP.

2 As the result of a reorganization in March 2002, Common Carrier Bureau functions described in this section are now performed by the Wireline Competition Bureau. In this section, references to the Common Carrier Bureau apply to activities prior to the above date.

include non-Bell carriers subject to price-cap regulation.[3] Second, the Commission included service quality reports in the Automated Reporting Management Information System (ARMIS).[4] Third, the Commission ordered significant changes to the kinds of data these carriers had to report.[5] Following these developments, the Commission released service quality summary reports in February 1993, March 1994, March 1996, September 1998, December 1999, December 2001, and January 2003.

In 1996, pursuant to requirements in the Telecommunications Act of 1996,[6] the Commission reduced the frequency of the filed data from quarterly to annual submissions.[7] In May 1997, relevant definitions were clarified further. These changes have been reflected starting with data covering the 1997 calendar year.

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3 *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Second Report and Order, 5 FCC Rcd 6786, 6827-31 (1990) (*LEC Price Cap Order*) (establishing the current service quality monitoring program and incorporating the service quality reports into the ARMIS program), Erratum, 5 FCC Rcd 7664 (1990), *modified on recon*, 6 FCC Rcd 2637 (1991), *aff'd sub nom., Nat'l Rural Telecom Ass'n v. FCC*, 988 F.2d 174 (D.C. Cir. 1993). The incumbent local exchange carriers that are rate-of-return regulated are not subject to federal service quality reporting requirements.

4 *LEC Price Cap Order*, 5 FCC Rcd at 6827-30. The ARMIS database includes a variety of mechanized company financial and infrastructure reports in addition to the quality-of-service reports. Most data are available disaggregated to a study area or state level.

5 *Id*; *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Memorandum Opinion and Order, 6 FCC Rcd 2974 (1991) (*Service Quality Order*), *recon*, 6 FCC Rcd 7482 (1991). Previously the Common Carrier Bureau had collected data on five basic service quality measurements from the Bell Operating Companies. These were customer satisfaction levels, dial tone delay, transmission quality, on time service orders, and percentage of call blocking due to equipment failure.

6 *Telecommunications Act of 1996*, Pub. L. No. 104-104, 110 Stat. 56.

7 Orders implementing filing frequency and other reporting requirement changes associated with implementation of the Telecommunications Act of 1996 are as follows: *Implementation of the Telecommunications Act of 1996: Reform of Filing Requirements and Carrier Classifications*, CC Docket No. 96-193, Order and Notice of Proposed Rulemaking, 11 FCC Rcd 11716 (1996); *Revision of ARMIS Quarterly Report (FCC Report 43-01) et al.*, CC Docket No. 96-193, Order, 11 FCC Rcd 22508 (1996); *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Memorandum Opinion and Order, 12 FCC Rcd 8115 (1997); *Revision of ARMIS Annual Summary Report (FCC Report 43-01) et al.*, AAD No. 95-91, Order, 12 FCC Rcd 21831 (1997).

The Data

The source data used in preparing this section may be useful for further investigation and can be readily extracted from the ARMIS 43-05 and 43-06 tables on the online database maintained on the FCC website at <www.fcc.gov/wcb/eafs>. The data are also available from Qualex International, at (202) 863-2893. A number of prior data summary reports are available through the FCC's Reference Information Center (Courtyard Level) at 445 12th Street, SW, Washington, D.C. 20554.

The data presented in this section summarize the most recent ARMIS 43-05 and 43-06 carrier reports, setting forth data for calendar year 2002. The tables accompanying this section highlight many of the data elements now received by the Commission. Tables include data from each major holding company of the regional Bell companies, along with GTE which is now part of Verizon, and Sprint.[8]

The data items summarized in the tables are based on information aggregated by the companies on a study area or state basis as well as a fairly extensive amount of raw data about switching outages, including outage durations and number of lines affected. A number of useful measures were calculated from these raw data records such as outage line-minutes per access line and average outage duration.

The data summarized in the tables of this section contain sums, or weighted averages, of data reported at the state or study area level of aggregation. Such data are useful in assessing overall trends. Where information is reported in terms of percentages or average time intervals, data presented in the tables are based on a composite of individual study area data that are calculated by weighting the percentage or time interval figures. For example, we weight the percent of commitments met by the corresponding number of orders provided in the filed data.[9]

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8 In February 1992, United Telecommunications Inc. became Sprint Corporation (Local Division); and in March 1993, Sprint Corporation acquired Centel Corporation. Bell Atlantic and NYNEX merged in August 1997, and then merged with GTE in 2000. Verizon Communications is shown separately for GTE, Verizon North (the former NYNEX companies), and Verizon South (the former Bell Atlantic Companies). SBC, Pacific Telesis and Ameritech are shown separately despite the merger of SBC and Pacific Telesis in April 1997 and SBC and Ameritech in October 1999.

9 Company composite data were typically recalculated on a consistent basis from study area data, particularly to assure that averages are calculated in a consistent manner. Although the companies have prepared their own company rollups, we have discovered various inconsistencies or inaccuracies in some of these company-prepared composites. We have therefore weighted data involving percentages or time intervals in order to arrive at the more consistent composite data shown in the tables and expect that the companies will want to review their procedures for preparing composites. Parameters used for weighting in this section were appropriate for the composite being calculated and were based on the raw data filed by the carriers but are not necessarily shown in the tables. For example, we

The key items contained in the tables are summarized below. Installation, maintenance and customer complaint data are shown in Table 9.1 and switch downtime and trunk servicing data are shown in Table 9.2. Installation and maintenance data are presented separately for services provided to end users and for interexchange carrier access facilities. Outage data categorized by cause are shown in Table 9.3. Customer perception data are contained in Table 9.4 and the associated survey sample sizes are contained in Table 9.5. The tables cover data for 2002. This section displays a number of data elements that have remained roughly comparable over the past few years. More detailed information on the raw data from which this section has been developed is contained on the Commission's website for the ARMIS database noted above and in the report noted in footnote 2. In addition, complete data descriptions are available in several Commission Orders. [10]

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calculate composite installation interval data by summing the individual study area results multiplied by the number of installation orders reported for each study area and then dividing the result by the total number of orders.

10 Orders implementing filing frequency and other reporting requirement changes associated with implementation of the Telecommunications Act of 1996 are as follows: *Implementation of the Telecommunications Act of 1996: Reform of Filing Requirements and Carrier Classifications*, Order and Notice of Proposed Rulemaking, 11 FCC Rcd 11716 (1996); *Revision of ARMIS Quarterly Report (FCC Report 43-01) et al.*, Order, 11 FCC Rcd 22508 (1996); *Policy and Rules Concerning Rates for Dominant Carriers*, Memorandum Opinion and Order, 12 FCC Rcd 8115 (1997); *Revision of ARMIS Annual Summary Report (FCC Report 43-01) et al.*, Order, 12 FCC Rcd 21831 (1997).

**Table 9.1**
**Installation, Maintenance, & Customer Complaints**
**Company Comparison - 2002**

| Company | BellSouth | Qwest | SBC Ameritech | SBC Pacific | SBC Southwestern | Verizon North | Verizon South | Verizon GTE | Sprint |
|---|---|---|---|---|---|---|---|---|---|
| ACCESS SERVICES PROVIDED TO INTEREXCHANGE CARRIERS – SWITCHED ACCESS | | | | | | | | | |
| Percent Installation Commitments Met | 100 0 | 98 5 | 85 2 | 90 5 | 85 1 | 98 7 | 98 7 | 91 2 | 93 8 |
| Average Installation Interval (days) | 19 1 | 12 7 | 43 3 | 28 3 | 31 7 | 29 7 | 23 0 | 25 5 | 16 5 |
| Average Repair Interval (hours) | 0 7 | 1 7 | 22 3 | 16 6 | 13 5 | 2 6 | 3 2 | 10 4 | 2 8 |
| ACCESS SERVICES PROVIDED TO INTEREXCHANGE CARRIERS -- SPECIAL ACCESS | | | | | | | | | |
| Percent Installation Commitments Met | 99 9 | 96 9 | 98 1 | 85 3 | 89 6 | 88 4 | 94 6 | 90 5 | 92 9 |
| Average Installation Interval (days) | 13 1 | 10 8 | 15 2 | 28 7 | 12 7 | 25 2 | 17 1 | 20 5 | 9 9 |
| Average Repair Interval (hours) | 3 0 | 2 4 | 4 0 | 3 4 | 3 2 | 8 1 | 3 3 | 14 6 | 4 7 |
| LOCAL SERVICES PROVIDED TO RESIDENTIAL AND BUSINESS CUSTOMERS | | | | | | | | | |
| Percent Installation Commitments Met | 93 0 | 99 4 | 99 0 | 99 5 | 98 6 | 98 6 | 98 5 | 98 7 | 97 8 |
| Residence | 97 1 | 99 5 | 99 1 | 99 6 | 98 7 | 98 6 | 98 7 | 98 9 | 98 2 |
| Business | 88 9 | 98 6 | 98 3 | 98 9 | 98 0 | 97 8 | 96 7 | 96 8 | 94 9 |
| Average Installation Interval (days) | 1 3 | 0 6 | 2 1 | 1 4 | 1 6 | 1 1 | 1 3 | 0 6 | 1 6 |
| Residence | 1 0 | 0 5 | 2 1 | 1 2 | 1 6 | 1 0 | 1 2 | 0 4 | 1 5 |
| Business | 1 6 | 1 4 | 2 6 | 2 7 | 1 8 | 1 8 | 2 4 | 1 7 | 2 5 |
| Average Out of Service Repair Interval (hours) | 18 4 | 13 6 | 18 6 | 23 5 | 19 8 | 23 8 | 21 6 | 14 3 | 15 1 |
| Residence | 20 0 | 13 6 | 18 9 | 25 9 | 21 0 | 25 1 | 22 9 | 15 4 | 15 2 |
| Business | 10 6 | 13 5 | 17 1 | 12 1 | 13 2 | 18 9 | 15 2 | 9 2 | 13 7 |
| Initial Trouble Reports per Thousand Lines | 285 0 | 111 4 | 165 7 | 129 0 | 186 8 | 175 1 | 135 8 | 143 9 | 165 6 |
| Total MSA | 267 5 | 110 5 | 169 1 | 126 8 | 173 3 | 182 1 | 132 7 | 138 2 | 148 0 |
| Total Non MSA | 380 7 | 115 1 | 128 4 | 179 9 | 254 4 | 133 1 | 172 3 | 165 1 | 200 6 |
| Total Residence | 326 7 | 134 1 | 214 6 | 168 8 | 258 8 | 245 0 | 178 5 | 165 2 | 202 3 |
| Total Business | 174 8 | 61 2 | 75 1 | 58 9 | 71 9 | 81 8 | 65 1 | 95 0 | 69 0 |
| Troubles Found per Thousand Lines | 161 3 | 76 2 | 111 9 | 106.2 | 130 2 | 125 9 | 102 9 | 122 1 | 93.0 |
| Repeat Troubles as a Pct of Trouble Reports | 19 8% | 21 9% | 28 3% | 13 3% | 15 9% | 20 1% | 18 9% | 12 4% | 19 6% |
| Res. Complaints per Mill Res Access Lines | 203 8 | 169 1 | 324 4 | 20 4 | 26 8 | 166 9 | 312 5 | 86 7 | 110 3 |
| Bus Complaints per Mill Bus Access Lines | 59 3 | 129 3 | 102 4 | 4 6 | 7 1 | 47 9 | 58 6 | 33 8 | 40 2 |

Please refer to text for notes and data qualifications

**Table 9.2**
**Switch Downtime & Trunk Blocking**
**Company Comparison - 2002**

| Company | BellSouth | Qwest | SBC Ameritech | SBC Pacific | SBC Southwestern | Verizon North | Verizon South | Verizon GTE | Sprint |
|---|---|---|---|---|---|---|---|---|---|
| Total Access Lines in Thousands | 22,955 | 15,682 | 19,151 | 17,248 | 15,294 | 17,442 | 21,368 | 16,894 | 7,953 |
| Total Trunk Groups | 3,577 | 3,378 | 1,111 | 1,581 | 802 | 826 | 1,005 | 1,669 | 7,436 |
| Total Switches | 1,637 | 1,337 | 1,455 | 778 | 1,652 | 1,279 | 1,344 | 3,130 | 1,563 |
| Switches with Downtime | | | | | | | | | |
| Number of Switches | 68 | 252 | 201 | 32 | 71 | 34 | 28 | 40 | 136 |
| As a Percentage of Total Switches | 4 2% | 18 8% | 13 8% | 4 1% | 4 3% | 2 7% | 2 1% | 1 3% | 8 7% |
| Average Switch Downtime in Seconds per Switch | | | | | | | | | |
| For All Events | 97 8 | 95 0 | 90 5 | 4 2 | 49 0 | 36 3 | 31 2 | 117 2 | 460 8 |
| For Unscheduled Events Over 2 Minutes | 88 0 | 78 0 | 29 5 | 3 2 | 44 7 | 33 6 | 30 3 | 118 9 | 381 1 |
| For Unscheduled Downtime More Than 2 Minutes | | | | | | | | | |
| Number of Occurrences or Events | 33 | 42 | 25 | 8 | 11 | 26 | 13 | 42 | 71 |
| Events per Hundred Switches | 2 0 | 3 1 | 1 7 | 1 0 | 0 7 | 2 0 | 1 0 | 1 3 | 4 5 |
| Events per Million Access Lines | 1 44 | 2 68 | 1 31 | 0 46 | 0 72 | 1 49 | 0 61 | 2 49 | 8 93 |
| Average Outage Duration in Minutes | 72 7 | 41 4 | 28 6 | 5 1 | 111 8 | 27 6 | 52 2 | 147 7 | 139 8 |
| Average Lines Affected per Event in Thousands | 21 8 | 6 3 | 28 1 | 37 5 | 23 8 | 23 7 | 22 2 | 6 9 | 12 3 |
| Outage Line-Minutes per Event in Thousands | 766 9 | 218 7 | 644 9 | 171 9 | 2,900 1 | 483 1 | 163 6 | 859 8 | 1,896 0 |
| Outage Line-Minutes per 1,000 Access Lines | 1,102 5 | 585 7 | 841 9 | 79 7 | 2,085 8 | 720 1 | 99 5 | 2,137 6 | 16,925 4 |
| For Scheduled Downtime More Than 2 Minutes | | | | | | | | | |
| Number of Occurrences or Events | 4 | 51 | 58 | 0 | 7 | 3 | 3 | 1 | 64 |
| Events per Hundred Switches | 0 2 | 3 8 | 4 0 | 0 0 | 0 4 | 0 2 | 0 2 | 0 0 | 4 1 |
| Events per Million Access Lines | 0 17 | 3 25 | 3 03 | 0 00 | 0 46 | 0 17 | 0 14 | 0 06 | 8 05 |
| Average Outage Duration in Minutes | 5 1 | 4 0 | 24 8 | NA | 14 3 | 10 7 | 2 3 | NA | 32 4 |
| Avg Lines Affected per Event in Thousands | 8 5 | 11 2 | 18 5 | NA | 52 3 | 20 8 | 23 6 | NA | 9.9 |
| Outage Line-Minutes per Event in Thousands | 28 1 | 53 3 | 539 9 | NA | 243 6 | 203 9 | 55 6 | NA | 364.7 |
| Outage Line-Minutes per 1,000 Access Lines | 4 9 | 173 4 | 1,635 2 | 0 0 | 111 5 | 35 1 | 7 8 | 0 4 | 2,934 9 |
| % Common Trunk Grps Exceeding Blocking Objectives | 2 60% | 2 19% | 8 37% | 1 45% | 0 25% | 3 63% | 8 26% | 0 06% | 0 15% |

NA. Not available

Please refer to text for notes and data qualifications

**Table 9.3**
**Switch Downtime Causes**
**Company Comparison - 2002**

| Company | BellSouth | Qwest | SBC Ameritech | SBC Pacific | SBC Southwestern | Verizon North | Verizon South | Verizon GTE | Sprint |
|---|---|---|---|---|---|---|---|---|---|
| Total Number of Outages | | | | | | | | | |
| 1 Scheduled | 4 | 51 | 58 | 0 | 7 | 3 | 3 | 1 | 64 |
| 2 Procedural Errors -- Telco (Inst /Maint ) | 0 | 0 | 0 | 0 | 4 | 3 | 1 | 4 | 20 |
| 3 Procedural Errors -- Telco (Other) | 5 | 7 | 1 | 1 | 0 | 0 | 0 | 9 | 0 |
| 4 Procedural Errors -- System Vendors | 4 | 4 | 1 | 0 | 1 | 2 | 0 | 1 | 1 |
| 5 Procedural Errors -- Other Vendors | 0 | 1 | 0 | 0 | 2 | 1 | 2 | 2 | 1 |
| 6 Software Design | 9 | 2 | 13 | 0 | 3 | 7 | 2 | 1 | 3 |
| 7 Hardware Design | 1 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 Hardware Failure | 8 | 25 | 1 | 6 | 0 | 12 | 5 | 15 | 13 |
| 9 Natural Causes | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 4 | 3 |
| 10 Traffic Overload | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 Environmental | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| 12 External Power Failure | 4 | 3 | 0 | 0 | 0 | 0 | 2 | 5 | 9 |
| 13 Massive Line Outage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 14 Remote | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| 15 Other/Unknown | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 7 |
| Total Outage Line-Minutes per Thousand Access Lines | | | | | | | | | |
| 1 Scheduled | 4 9 | 173 4 | 1,635 2 | 0 0 | 111 5 | 35 1 | 7 8 | 0 4 | 2,934 9 |
| 2 Procedural Errors -- Telco (Inst /Maint ) | 0 0 | 0 0 | 0 0 | 0 0 | 1,661 7 | 186 1 | 8 7 | 84 7 | 224 3 |
| 3 Procedural Errors -- Telco (Other) | 25 0 | 146 5 | 7 7 | 10 0 | 0 0 | 0 0 | 0 0 | 373 3 | 0 0 |
| 4 Procedural Errors -- System Vendors | 211 0 | 28 3 | 3 3 | 0 0 | 7 0 | 24 3 | 0 0 | 94 9 | 264 7 |
| 5 Procedural Errors -- Other Vendors | 0 0 | 84 6 | 0 0 | 0 0 | 390 1 | 0 5 | 0 5 | 109 9 | 9 6 |
| 6. Software Design | 718 2 | 3 0 | 747 8 | 0 0 | 24 6 | 394 4 | 23 4 | 0 2 | 2,061 1 |
| 7 Hardware Design | 3 7 | 0 0 | 76 5 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 |
| 8 Hardware Failure | 78 4 | 180 7 | 6 7 | 47 9 | 0 0 | 114 7 | 17 7 | 674 6 | 2,446 6 |
| 9 Natural Causes | 5 5 | 0 0 | 0 0 | 0 0 | 2 5 | 0 1 | 21 6 | 128 4 | 7,190 4 |
| 10. Traffic Overload | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 |
| 11. Environmental | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 561 7 | 60 6 |
| 12. External Power Failure | 45 4 | 142 5 | 0 0 | 0 0 | 0 0 | 0 0 | 27 6 | 110 0 | 1,941 4 |
| 13 Massive Line Outage | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 1,725 9 |
| 14 Remote | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 972 7 |
| 15 Other/Unknown | 15 3 | 0 0 | 0 0 | 21.9 | 0 0 | 0 0 | 0 0 | 0 0 | 28 2 |

Please refer to text for notes and data qualifications

**Table 9.4**
**Customer Perception Surveys - Percent of Customers Dissatisfied**
**Company Comparision - 2002**

| Company | BellSouth | Qwest | SBC Ameritech | SBC Pacific | SBC Southwestern | Verizon North | Verizon South | Verizon GTE | Sprint |
|---|---|---|---|---|---|---|---|---|---|
| Installations | | | | | | | | | |
| Residential | 10 25 | 7 17 | 10 67 | 6 35 | 8 12 | 5 26 | 5 07 | 4 36 | NA |
| Small Business | 9 58 | 15 93 | 11 85 | 6 30 | 8 87 | 9 20 | 8 16 | 7 69 | NA |
| Large Business | 7 33 | NA | 10 69 | 5 55 | 6 44 | 1 84 | 2 73 | 4 79 | NA |
| Repairs. | | | | | | | | | |
| Residential | 14.60 | 9 30 | 14 57 | 7 25 | 9 63 | 15 96 | 14 62 | 12.36 | NA |
| Small Business | 8.49 | 11 82 | 12 81 | 5 61 | 6 76 | 11 89 | 9.53 | 9 05 | NA |
| Large Business | 6 67 | NA | 11 67 | 4 08 | 5 90 | 4 39 | 2 98 | 4 42 | NA |
| Business Office· | | | | | | | | | |
| Residential | 12 26 | 3 63 | 13.23 | 5.96 | 8 88 | 6 78 | 5 71 | 6 20 | NA |
| Small Business | 14.26 | 7 09 | 12.48 | 5 79 | 7.67 | 7 67 | 8 73 | 9.04 | NA |
| Large Business | 9 00 | NA | 10 99 | 5.88 | 6.67 | 2 21 | 6.86 | 5 73 | NA |

NA: Not available

Please refer to text for notes and data qualifications

**Table 9.5**
**Customer Perception Surveys - Sample Sizes**
**Company Comparision - 2002**

| Company | BellSouth | Qwest | SBC Ameritech | SBC Pacific | SBC Southwestern | Verizon North | Verizon South | Verizon GTE | Sprint |
|---|---|---|---|---|---|---|---|---|---|
| Installations. | | | | | | | | | |
| Residential | 27,226 | 7,086 | 10,693 | 10,742 | 7,899 | 20,440 | 18,597 | 22,434 | NA |
| Small Business | 31,351 | 3,542 | 10,477 | 10,515 | 7,240 | 18,590 | 18,385 | 18,332 | NA |
| Large Business | 8,496 | NA | 3,355 | 3,206 | 2,660 | 837 | 1,104 | 313 | NA |
| Repairs | | | | | | | | | |
| Residential | 27,948 | 2,267 | 10,722 | 12,615 | 10,819 | 20,349 | 18,550 | 18,523 | NA |
| Small Business | 34,260 | 513 | 10,745 | 10,358 | 10,719 | 20,323 | 18,116 | 22,439 | NA |
| Large Business | 7,929 | NA | 3,710 | 3,063 | 2,726 | 780 | 925 | 294 | NA |
| Business Office. | | | | | | | | | |
| Residential | 41,753 | 7,086 | 21,409 | 23,834 | 38,342 | 10,851 | 13,622 | 14,462 | NA |
| Small Business | 11,106 | 3,542 | 20,787 | 21,294 | 4,823 | 5,308 | 5,683 | 5,500 | NA |
| Large Business | 400 | NA | 3,454 | 4,681 | 2,639 | 660 | 845 | 227 | NA |

NA: Not available

Please refer to text for notes and data qualifications

## 10. Infrastructure

The infrastructure information contained in this section is based upon data collected by the FCC as part of its price-cap monitoring procedures.[1] This summary is intended to highlight changes in the use of technology in the local telephone company plant. The data (ARMIS 43-07 reports[2]) upon which this infrastructure summary is based are due April 1 for the previous calendar year. This infrastructure report includes data through 2002.[3] The most recent data were due April 1, 2003. No revisions have been filed in time for inclusion in this summary.

Background

The data items presented here summarize ARMIS Report 43-07, which is filed by local exchange carriers subject to mandatory price-cap regulation. The information contained in this report is for the years 1992 through 2002. Since last year, recent changes to our infrastructure data collection process are reflected in this year's data. A number of items have been eliminated from reporting requirements and no longer will be addressed in this report.[4] Most of the eliminated items relate to switching technologies that have become obsolete or reflect virtually complete deployment of capabilities such as touch-tone capability. New data are being collected

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1 *Policy and Rules Concerning Rates For Dominant Carriers*, CC Docket No. 87-313, Second Report and Order, 5 FCC Rcd 6786 (1990) (*LEC Price Cap Order*), Erratum, 5 FCC Rcd 7664 (Com. Car. Bur. 1990); *Policy and Rules Concerning Rates For Dominant Carriers*, CC Docket No. 87-313, Memorandum Opinion and Order, 8 FCC Rcd 7474 (Com. Car. Bur. 1993) (*Service Quality Modifications Order*).

2 ARMIS, an acronym for Automated Reporting Management Information System, is a publicly available repository of financial, plant, demand, and quality-of-service data. Additional infrastructure data are contained in the ARMIS 43-08 report. See *Statistics of Communications Common Carriers*, published annually by the Wireline Competition Bureau's Industry Analysis and Technology Division for a compilation of ARMIS 43-08 infrastructure data.

3 See *Infrastructure of the Local Operating Companies Aggregated to the Holding Company Level*, released April 24, 1995 for data for the years 1989 and 1990. Some of the data for those early years are not a part of this summary and may contain discrepancies that make the early data inconsistent with that of later years. Reports containing data for the early years can be found in the infrastructure section of the FCC-State Link Internet site at www.fcc.gov/wcb/stats under the file names INFRA99.ZIP, INFRA98.ZIP, INFRA95.ZIP, and INFRA93.ZIP. More recent reports can be found in Section 10 of earlier versions of this report on the same web page under the section covering the Commission's Federal-State Joint Board Monitoring Reports.

4 Historical information for the entries that are no longer reported can be found in the 2002 *Monitoring Report*.

Although the overall level of growth in fiber has been high, its use in the local loop at present appears to be relatively small. The reporting companies included in this report had an installed base of about 215 million copper-pair mainframe terminations in their central offices for local loop use in 2002. In comparison, about 3 million fiber loop central office terminations had been installed by end-of-year 2002. The data show that the number of these terminations actually declined by about 8.6% during 2002 as compared to an increase of over 13% in 2001. In 2002 more modest growth in DS-3 terminations on fiber facilities is evident as compared to prior years. Over the longer term, fiber and hybrid copper/fiber systems will likely become increasingly important in the local loop as the number of high-quality copper pairs available to support higher data rate digital services declines.

As noted earlier, the data presented in this report do not include data associated with hybrid fiber/copper interfaces including information on offerings of xDSL services for which the companies requested proprietary treatment.[11] Nonetheless the number of ISDN capable lines can be used as an upper bound for potential broadband availability over copper loops, since copper loop characteristics necessary to support ISDN services are also required for newer xDSL services.[12] Readers interested in more disaggregated information may wish to examine data at a more localized level than presented here.[13]

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(authored by J. Kraushaar, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission).

11 xDSL (Digital Subscriber Loop) services that are now available offer broadband digital capability using special terminal equipment that enhances the capability of existing copper access lines.

12 Table 10.1 includes the number of switch terminations that are available for ISDN and ISDN capable lines. Table 10.2 includes the number of copper loops that are capable of supporting ISDN.

13 Individual study-area data are also available to address more localized issues. This information is available from the ARMIS web page at <www.fcc.gov/wcb/eafs/>.

ARMIS data currently collected only cover circuit switches that provide a dedicated path through the network for the duration of a call, not routers or switches that are used to handle internet traffic or in connection with frame relay and ATM services that are specifically designed to handle data packets.[9] Almost all of the major local exchange carrier switches are digital. About one-third of these are ISDN capable. However, the rate at which new ISDN switching capability is being added to the networks has slowed considerably, in recent years with 162 additional ISDN capable switches being reported in 2002. Even so, in 2002, the reported number of equipped ISDN Primary Rate Interfaces increased by 1.4 percent, from 551,102 to 558,763. ISDN basic rate services also grew, in spite of the use of xDSL technologies, with about 84,495 reported new Basic Rate Interfaces equipped or working in 2002.

A number of transmission elements are included in Table 10.2. Definitions for these elements can be found on the Commissions ARMIS website noted above. These illustrate the rapid development of fiber capacity in terms of terminations, sheath kilometers, and links. The number of sheath kilometers of fiber more than doubled over the decade 1992-2002, with about 25,834 new fiber sheath kilometers being reported in 2002. During the same period, the number of sheath kilometers of copper remained steady at somewhat over 5 million, and other sheath data, in relative terms, were not significant.

Table 10.2 also highlights the relative magnitude of equipped and working channels. While copper channels have declined in 2002, fiber equipped channels have increased by about 10.7 percent, and fiber working channels have increased by about 6.6 percent. Total interoffice circuit links have only increased very slightly over last year. Although circuits connecting local central offices could typically be provided on only two fibers, the economics of fiber deployment have resulted in deployments of typical fiber cables containing more than 40 fibers. This suggests that there is a significant amount of fiber capacity currently unused in the *interoffice* transmission plant.[10]

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*Jurisdictional Separations Reform and Referral to the Federal-State Joint Board; and Local Competition and Broadband Reporting*, CC Docket Nos. 00-199, 99-301, 97-212, 80-286, Report and Order in CC Docket Nos. 00-199, 97-212, and 80-286, Further Notice of Proposed Rulemaking in CC Docket Nos. 00-199, 99-301, and 80-286, 16 FCC Rcd 19911 (2001), *recon pending* (*Phase 2 Report and Order*).

9 Remote switches as defined in this report only cover those switches capable of functioning if the host switch fails.

10 A large portion of the cost of fiber deployment is associated with labor and installation rather than with the cable itself. Thus, the incremental cost of installing a larger fiber cable is typically relatively small. This suggests that the sheath-kilometer parameter shown in the attached tables may be a better measure of fiber coverage than fiber kilometers. In general, care should be exercised in interpreting aggregate fiber data when determining, for example, whether fiber is concentrated in certain parts of a company's service area with relatively little fiber elsewhere. See *Fiber Deployment Update - End of Year 1998*, released Sept. 9, 1999: <www.fcc.gov/wcb/iatd/stats.html>: FIBER98.ZIP

**Table 10.1**
**Switching Data**
**BellSouth Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Switches | 1,664 | 1,661 | 1,658 | 1,647 | 1,650 | 1,654 | 1,653 | 1,649 | 1,644 | 1,642 | 1,637 |
| Tandems | 66 | 70 | 70 | 71 | 70 | 70 | 71 | 71 | 73 | 77 | 77 |
| Hosts | 272 | 269 | 280 | 289 | 297 | 317 | 307 | 306 | 297 | 304 | 305 |
| Remotes (Stand Alone Only) | 703 | 714 | 732 | 742 | 747 | 766 | 765 | 765 | 776 | 819 | 829 |
| Total Switches | 1,678 | 1,680 | 1,677 | 1,668 | 1,670 | 1,674 | 1,673 | 1,668 | 1,665 | 1,665 | 1,664 |
| Analog Stored Program Control | 283 | 236 | 182 | 158 | 130 | 106 | 100 | 83 | 69 | 54 | 44 |
| Digital Stored Program Control | 1,395 | 1,444 | 1,495 | 1,510 | 1,540 | 1,568 | 1,573 | 1,585 | 1,596 | 1,611 | 1,620 |
| Total Number Access Lines in Service (000) | 18,607 | 19,233 | 20,141 | 21,064 | 22,019 | 23,080 | 23,909 | 24,458 | 24,558 | 23,756 | 22,955 |
| Analog Stored Program Control Lines Served | 7,173 | 5,929 | 4,837 | 4,455 | 4,020 | 3,746 | 3,536 | 2,972 | 2,362 | 1,729 | 1,309 |
| Digital Stored Program Control Lines Served | 11,434 | 13,304 | 15,304 | 16,609 | 17,999 | 19,334 | 20,373 | 21,486 | 22,197 | 22,027 | 21,646 |
| Total Switches Equipped w/SS7-394 (InterLATA) Svc | 966 | 1,447 | 1,627 | 1,629 | 1,652 | 1,674 | 1,673 | 1,668 | 1,665 | 1,665 | 1,664 |
| Total Switches Equipped with ISDN | 224 | 324 | 407 | 467 | 518 | 584 | 596 | 645 | 691 | 678 | 697 |
| Lines with Access to ISDN (000) | 4,934 | 7,606 | 9,708 | 10,988 | 12,948 | 14,894 | 15,980 | 17,413 | 18,396 | 17,660 | 17,457 |
| Basic Rate ISDN (BRI) Interfaces Equipped | 50,774 | 65,607 | 76,348 | 80,641 | 122,043 | 167,512 | 183,458 | 202,391 | 223,294 | 228,898 | 230,066 |
| Primary Rate ISDN (PRI) Interfaces Equipped | 559 | 1,814 | 3,534 | 4,803 | 9,154 | 21,389 | 33,564 | 51,669 | 72,347 | 85,983 | 81,328 |

Source ARMIS Report 43-07

**Table 10.1**
**Switching Data**
**Total - All Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Switches | 16,506 | 16,650 | 16,017 | 16,157 | 16,267 | 16,186 | 16,117 | 16,261 | 14,702 | 14,700 | 13,906 |
| Tandems | 477 | 475 | 456 | 470 | 484 | 481 | 493 | 492 | 498 | 516 | 520 |
| Hosts | 2,217 | 2,366 | 2,309 | 2,382 | 2,432 | 2,515 | 2,471 | 2,461 | 2,322 | 2,278 | 2,241 |
| Remotes (Stand Alone Only) | 5,689 | 6,349 | 6,706 | 7,140 | 7,098 | 7,164 | 7,977 | 8,103 | 7,335 | 7,356 | 7,538 |
| Total Switches | 16,701 | 16,858 | 16,195 | 16,342 | 16,486 | 16,448 | 16,392 | 16,516 | 14,953 | 14,972 | 14,208 |
| Analog Stored Program Control | 2,007 | 1,632 | 1,179 | 1,002 | 735 | 558 | 431 | 314 | 200 | 139 | 107 |
| Digital Stored Program Control | 12,739 | 13,733 | 13,987 | 14,601 | 15,356 | 15,722 | 15,961 | 16,202 | 14,753 | 14,833 | 14,101 |
| Total Number Access Lines in Service (000) | 125,776 | 129,642 | 133,409 | 138,907 | 143,239 | 150,043 | 155,530 | 159,364 | 158,107 | 153,614 | 146,034 |
| Analog Stored Program Control Lines Served | 49,989 | 42,746 | 33,699 | 29,409 | 24,803 | 21,416 | 16,688 | 11,713 | 7,192 | 4,810 | 3,283 |
| Digital Stored Program Control Lines Served | 73,815 | 85,549 | 98,799 | 108,903 | 118,149 | 128,470 | 138,842 | 147,651 | 150,915 | 148,804 | 142,752 |
| Total Switches Equipped w/SS7-394 (InterLATA) Svc | 5,745 | 8,037 | 10,358 | 11,890 | 13,171 | 13,879 | 15,148 | 15,994 | 14,681 | 14,817 | 14,122 |
| Total Switches Equipped with ISDN | 1,437 | 2,146 | 2,670 | 3,258 | 3,852 | 4,681 | 5,392 | 5,735 | 5,340 | 5,364 | 5,526 |
| Lines with Access to ISDN (000) | 29,775 | 41,970 | 61,549 | 77,523 | 95,113 | 106,575 | 121,408 | 127,357 | 131,003 | 127,382 | 122,420 |
| Basic Rate ISDN (BRI) Interfaces Equipped | 491,430 | 591,561 | 801,518 | 1,039,456 | 1,507,551 | 1,797,254 | 2,491,509 | 2,720,871 | 2,775,102 | 3,059,482 | 3,143,977 |
| Primary Rate ISDN (PRI) Interfaces Equipped | 3,147 | 5,816 | 15,526 | 32,580 | 67,885 | 136,233 | 234,515 | 334,910 | 429,295 | 551,102 | 558,763 |

Source: ARMIS Report 43-07

**Table 10.1**
**Switching Data**
**SBC Ameritech Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Switches | 1,433 | 1,422 | 1,413 | 1,415 | 1,410 | 1,435 | 1,419 | 1,432 | 1,447 | 1,451 | 1,455 |
| Tandems | 46 | 47 | 47 | 46 | 46 | 47 | 51 | 52 | 53 | 55 | 63 |
| Hosts | 178 | 230 | 236 | 238 | 236 | 243 | 236 | 234 | 234 | 235 | 236 |
| Remotes (Stand Alone Only) | 666 | 684 | 717 | 731 | 743 | 769 | 764 | 775 | 790 | 789 | 790 |
| Total Switches | 1,473 | 1,469 | 1,460 | 1,461 | 1,456 | 1,482 | 1,470 | 1,485 | 1,500 | 1,506 | 1,518 |
| Analog Stored Program Control | 318 | 224 | 119 | 97 | 71 | 58 | 46 | 39 | 37 | 34 | 24 |
| Digital Stored Program Control | 1,155 | 1,245 | 1,341 | 1,364 | 1,385 | 1,424 | 1,424 | 1,446 | 1,463 | 1,472 | 1,494 |
| Total Number Access Lines in Service (000) | 16,887 | 17,500 | 18,122 | 19,310 | 19,553 | 20,335 | 20,790 | 21,036 | 20,898 | 20,074 | 19,151 |
| Analog Stored Program Control Lines Served | 7,898 | 5,862 | 3,845 | 3,727 | 3,228 | 2,793 | 2,193 | 1,811 | 1,730 | 1,491 | 927 |
| Digital Stored Program Control Lines Served | 8,988 | 11,638 | 14,278 | 15,583 | 16,324 | 17,541 | 18,597 | 19,225 | 19,168 | 18,583 | 18,224 |
| Total Switches Equipped w/SS7-394 (InterLATA) Svc | 646 | 1,001 | 1,254 | 1,400 | 1,438 | 1,463 | 1,451 | 1,476 | 1,492 | 1,496 | 1,504 |
| Total Switches Equipped with ISDN | 181 | 387 | 444 | 489 | 601 | 695 | 784 | 816 | 822 | 844 | 933 |
| Lines with Access to ISDN (000) | 3,839 | 8,056 | 10,259 | 12,860 | 13,802 | 15,464 | 16,804 | 17,472 | 17,388 | 16,814 | 16,810 |
| Basic Rate ISDN (BRI) Interfaces Equipped | 56,352 | 67,415 | 87,862 | 97,550 | 226,355 | 180,280 | 220,867 | 259,312 | 271,468 | 283,600 | 290,367 |
| Primary Rate ISDN (PRI) Interfaces Equipped | 728 | 707 | 1,505 | 1,677 | 4,247 | 14,569 | 24,800 | 38,037 | 53,926 | 70,542 | 75,184 |

Source: ARMIS Report 43-07

**Table 10.1**
**Switching Data**
**Qwest Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Switches | 1,834 | 1,841 | 1,738 | 1,641 | 1,521 | 1,441 | 1,446 | 1,428 | 1,400 | 1,354 | 1,337 |
| Tandems | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 53 | 51 | 56 |
| Hosts | 195 | 222 | 232 | 238 | 248 | 249 | 253 | 251 | 245 | 252 | 226 |
| Remotes (Stand Alone Only) | 692 | 880 | 984 | 961 | 852 | 781 | 786 | 752 | 733 | 680 | 651 |
| Total Switches | 1,852 | 1,858 | 1,752 | 1,654 | 1,534 | 1,492 | 1,458 | 1,441 | 1,414 | 1,363 | 1,351 |
| Analog Stored Program Control | 294 | 261 | 213 | 188 | 146 | 113 | 95 | 71 | 20 | 1 | 1 |
| Digital Stored Program Control | 1,168 | 1,387 | 1,519 | 1,465 | 1,387 | 1,379 | 1,363 | 1,370 | 1,394 | 1,362 | 1,350 |
| Total Number Access Lines in Service (000) | 13,268 | 13,710 | 14,309 | 14,817 | 15,405 | 16,132 | 16,859 | 17,449 | 17,626 | 17,070 | 15,682 |
| Analog Stored Program Control Lines Served | 6,508 | 6,257 | 5,303 | 4,706 | 4,245 | 4,228 | 3,574 | 2,501 | 636 | 30 | 28 |
| Digital Stored Program Control Lines Served | 6,364 | 7,292 | 8,988 | 10,110 | 11,159 | 11,905 | 13,286 | 14,948 | 16,991 | 17,040 | 15,654 |
| Total Switches Equipped w/SS7-394 (InterLATA) Svc | 470 | 620 | 819 | 1,116 | 1,143 | 1,305 | 1,346 | 1,350 | 1,340 | 1,311 | 1,311 |
| Total Switches Equipped with ISDN | 163 | 213 | 240 | 262 | 327 | 541 | 557 | 583 | 623 | 603 | 587 |
| Lines with Access to ISDN (000) | 4,757 | 3,982 | 5,045 | 6,192 | 9,668 | 10,264 | 11,189 | 12,522 | 14,573 | 14,419 | 13,153 |
| Basic Rate ISDN (BRI) Interfaces Equipped | 92,613 | 108,775 | 120,058 | 126,530 | 146,570 | 162,953 | 165,733 | 167,623 | 176,696 | 174,079 | 199,302 |
| Primary Rate ISDN (PRI) Interfaces Equipped | 396 | 674 | 742 | 2,315 | 2,734 | 4,329 | 4,867 | 6,112 | 7,822 | 11,046 | 61,993 |

Source ARMIS Report 43-07.

**Table 10.1**
**Switching Data**
**SBC Southwestern Bell Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Switches | 1,392 | 1,437 | 1,511 | 1,644 | 1,670 | 1,690 | 1,644 | 1,658 | 1,663 | 1,660 | 1,652 |
| Tandems | 67 | 64 | 60 | 60 | 60 | 60 | 67 | 56 | 69 | 70 | 70 |
| Hosts | 191 | 230 | 233 | 245 | 241 | 267 | 230 | 228 | 229 | 230 | 244 |
| Remotes (Stand Alone Only) | 488 | 672 | 779 | 935 | 1,077 | 1,077 | 1,158 | 1,163 | 1,152 | 1,150 | 1,150 |
| Total Switches | 1,425 | 1,469 | 1,539 | 1,679 | 1,730 | 1,750 | 1,711 | 1,727 | 1,715 | 1,716 | 1,722 |
| Analog Stored Program Control | 348 | 308 | 264 | 252 | 162 | 136 | 115 | 88 | 67 | 46 | 34 |
| Digital Stored Program Control | 855 | 1,078 | 1,202 | 1,369 | 1,568 | 1,614 | 1,596 | 1,639 | 1,648 | 1,670 | 1,688 |
| Total Number Access Lines in Service (000) | 12,693 | 13,180 | 13,611 | 14,095 | 14,104 | 15,306 | 15,872 | 16,287 | 16,411 | 15,842 | 15,294 |
| Analog Stored Program Control Lines Served | 7,455 | 7,078 | 6,608 | 6,531 | 5,657 | 5,055 | 4,119 | 3,107 | 2,246 | 1,448 | 963 |
| Digital Stored Program Control Lines Served | 4,924 | 6,000 | 6,907 | 7,502 | 8,447 | 10,251 | 11,753 | 13,180 | 14,165 | 14,394 | 14,331 |
| Total Switches Equipped w/SS7-394 (InterLATA) Svc | 607 | 723 | 1,263 | 1,466 | 1,597 | 1,724 | 1,707 | 1,724 | 1,713 | 1,713 | 1,722 |
| Total Switches Equipped with ISDN | 92 | 92 | 123 | 303 | 331 | 331 | 360 | 428 | 441 | 461 | 472 |
| Lines with Access to ISDN (000) | 1,964 | 1,476 | 1,933 | 8,826 | 9,440 | 10,577 | 13,361 | 12,158 | 12,169 | 12,056 | 11,241 |
| Basic Rate ISDN (BRI) Interfaces Equipped | 88,960 | 88,960 | 57,041 | 108,784 | 104,604 | 185,018 | 225,427 | 267,190 | 281,459 | 310,326 | 308,501 |
| Primary Rate ISDN (PRI) Interfaces Equipped | 380 | 410 | 1,238 | 5,084 | 6,150 | 15,434 | 31,570 | 46,533 | 59,513 | 68,236 | 68,793 |

Source ARMIS Report 43-07

**Table 10.1**
**Switching Data**
**SBC Pacific Telesis Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Switches | 853 | 846 | 837 | 840 | 833 | 810 | 801 | 799 | 778 | 781 | 779 |
| Tandems | 20 | 20 | 20 | 20 | 20 | 21 | 24 | 24 | 24 | 31 | 31 |
| Hosts | 103 | 111 | 121 | 117 | 114 | 135 | 121 | 116 | 189 | 114 | 114 |
| Remotes (Stand Alone Only) | 253 | 302 | 320 | 316 | 310 | 364 | 361 | 350 | 361 | 360 | 358 |
| Total Switches | 873 | 866 | 857 | 860 | 853 | 830 | 824 | 822 | 802 | 812 | 810 |
| Analog Stored Program Control | 218 | 176 | 109 | 87 | 72 | 49 | 38 | 17 | 0 | 0 | 0 |
| Digital Stored Program Control | 652 | 687 | 746 | 772 | 781 | 781 | 786 | 805 | 802 | 812 | 810 |
| Total Number Access Lines in Service (000) | 14,661 | 14,971 | 15,417 | 16,021 | 16,460 | 17,155 | 18,158 | 18,285 | 18,236 | 17,788 | 17,248 |
| Analog Stored Program Control Lines Served | 8,128 | 7,036 | 5,029 | 4,036 | 3,354 | 2,422 | 1,825 | 754 | 0 | 0 | 0 |
| Digital Stored Program Control Lines Served | 6,532 | 7,934 | 10,387 | 11,985 | 13,106 | 14,733 | 16,333 | 17,531 | 18,236 | 17,788 | 17,248 |
| Total Switches Equipped w/SS7-394 (InterLATA) Svc | 374 | 522 | 764 | 772 | 794 | 791 | 803 | 796 | 778 | 812 | 810 |
| Total Switches Equipped with ISDN | 150 | 229 | 347 | 417 | 473 | 531 | 551 | 574 | 574 | 562 | 560 |
| Lines with Access to ISDN (000) | 2,905 | 5,349 | 8,494 | 10,291 | 11,895 | 13,632 | 15,134 | 16,529 | 17,589 | 16,966 | 16,427 |
| Basic Rate ISDN (BRI) Interfaces Equipped | 47,661 | 65,683 | 115,146 | 171,305 | 304,182 | 314,003 | 468,493 | 489,369 | 421,744 | 630,816 | 615,934 |
| Primary Rate ISDN (PRI) Interfaces Equipped | 308 | 357 | 708 | 3,491 | 13,448 | 20,125 | 31,345 | 47,794 | 49,712 | 94,742 | 54,902 |

Source: ARMIS Report 43-07

**Table 10.1**
**Switching Data**
**Verizon - GTE Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Switches | 6,597 | 6,731 | 6,155 | 6,274 | 6,499 | 6,453 | 6,538 | 6,659 | 5,136 | 5,190 | 4,423 |
| Tandems | 162 | 158 | 143 | 157 | 166 | 165 | 162 | 164 | 150 | 151 | 136 |
| Hosts | 924 | 955 | 849 | 884 | 929 | 939 | 955 | 945 | 742 | 761 | 652 |
| Remotes (Stand Alone Only) | 1,558 | 1,732 | 1,767 | 2,031 | 1,925 | 1,960 | 2,738 | 2,861 | 2,088 | 2,134 | 2,100 |
| Total Switches | 6,632 | 6,769 | 6,172 | 6,291 | 6,520 | 6,483 | 6,604 | 6,691 | 5,174 | 5,235 | 4,462 |
| Analog Stored Program Control | 83 | 78 | 46 | 26 | 17 | 10 | 0 | 0 | 0 | 0 | 0 |
| Digital Stored Program Control | 5,209 | 5,494 | 5,192 | 5,586 | 6,109 | 6,305 | 6,604 | 6,691 | 5,174 | 5,235 | 4,462 |
| Total Number Access Lines in Service (000) | 15,781 | 16,274 | 16,064 | 16,641 | 17,393 | 18,321 | 19,105 | 20,015 | 18,709 | 18,503 | 16,894 |
| Analog Stored Program Control Lines Served | 1,030 | 834 | 508 | 378 | 242 | 197 | 0 | 0 | 0 | 0 | 0 |
| Digital Stored Program Control Lines Served | 13,491 | 14,357 | 14,759 | 15,731 | 16,866 | 17,966 | 19,105 | 20,015 | 18,709 | 18,503 | 16,894 |
| Total Switches Equipped w/SS7-394 (InterLATA) Svc | 1,499 | 2,034 | 2,250 | 2,930 | 3,897 | 4,215 | 5,527 | 6,309 | 5,021 | 5,156 | 4,429 |
| Total Switches Equipped with ISDN | 218 | 272 | 270 | 390 | 523 | 779 | 1,246 | 1,385 | 884 | 913 | 949 |
| Lines with Access to ISDN (000) | 1,399 | 2,095 | 5,003 | 6,249 | 9,678 | 10,619 | 14,574 | 14,926 | 14,064 | 13,830 | 13,320 |
| Basic Rate ISDN (BRI) Interfaces Equipped | 22,763 | 30,741 | 63,012 | 91,326 | 98,145 | 126,946 | 139,471 | 167,964 | 173,507 | 173,220 | 169,320 |
| Primary Rate ISDN (PRI) Interfaces Equipped | 475 | 896 | 1,406 | 2,703 | 7,377 | 16,465 | 36,386 | 47,588 | 62,652 | 70,524 | 69,281 |

Source: ARMIS Report 43-07

**Table 10.1**
**Switching Data**
**Verizon - Bell Atlantic Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Switches | 2,733 | 2,712 | 2,705 | 2,696 | 2,684 | 2,703 | 2,616 | 2,636 | 2,634 | 2,622 | 2,623 |
| Tandems | 65 | 65 | 65 | 65 | 71 | 67 | 67 | 74 | 76 | 81 | 87 |
| Hosts | 354 | 349 | 358 | 371 | 367 | 365 | 369 | 381 | 386 | 382 | 464 |
| Remotes (Stand Alone Only) | 1,329 | 1,365 | 1,407 | 1,424 | 1,444 | 1,447 | 1,405 | 1,437 | 1,435 | 1,424 | 1,660 |
| Total Switches | 2,768 | 2,747 | 2,738 | 2,729 | 2,723 | 2,737 | 2,652 | 2,682 | 2,683 | 2,675 | 2,681 |
| Analog Stored Program Control | 463 | 349 | 246 | 194 | 137 | 86 | 37 | 16 | 7 | 4 | 4 |
| Digital Stored Program Control | 2,305 | 2,398 | 2,492 | 2,535 | 2,586 | 2,651 | 2,615 | 2,666 | 2,676 | 2,671 | 2,677 |
| Total Number Access Lines in Service (000) | 33,879 | 34,774 | 35,745 | 36,959 | 38,305 | 39,714 | 40,838 | 41,833 | 41,669 | 40,582 | 38,810 |
| Analog Stored Program Control Lines Served | 11,797 | 9,750 | 7,569 | 5,576 | 4,057 | 2,975 | 1,442 | 568 | 218 | 112 | 55 |
| Digital Stored Program Control Lines Served | 22,082 | 25,024 | 28,176 | 31,383 | 34,248 | 36,739 | 39,396 | 41,266 | 41,451 | 40,469 | 38,754 |
| Total Switches Equipped w/SS7-394 (InterLATA) Svc | 1,183 | 1,690 | 2,381 | 2,577 | 2,650 | 2,707 | 2,641 | 2,671 | 2,672 | 2,664 | 2,682 |
| Total Switches Equipped with ISDN | 409 | 629 | 839 | 930 | 1,079 | 1,220 | 1,298 | 1,304 | 1,305 | 1,303 | 1,328 |
| Lines with Access to ISDN (000) | 9,977 | 13,406 | 21,107 | 22,117 | 27,682 | 31,125 | 34,367 | 36,336 | 36,825 | 35,637 | 34,012 |
| Basic Rate ISDN (BRI) Interfaces Equipped | 132,307 | 164,380 | 282,051 | 363,320 | 505,652 | 660,542 | 1,088,060 | 1,167,022 | 1,226,934 | 1,258,543 | 1,330,487 |
| Primary Rate ISDN (PRI) Interfaces Equipped | 301 | 958 | 6,393 | 12,507 | 24,775 | 43,922 | 71,983 | 97,177 | 123,323 | 150,029 | 147,282 |

Source. ARMIS Report 43-07

**Table 10.2**
**Transmission System Data**
**BellSouth Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sheath Kilometers | | | | | | | | | | | |
| Total Sheath Kilometers | 979,751 | 993,633 | 1,005,397 | 1,020,809 | 1,034,601 | 1,050,186 | 1,074,896 | 1,094,569 | 1,115,897 | 1,134,363 | 1,145,506 |
| Copper | 921,509 | 927,265 | 930,812 | 937,626 | 943,090 | 951,758 | 965,108 | 973,995 | 983,221 | 989,541 | 992,446 |
| Fiber | 56,692 | 65,100 | 73,370 | 82,012 | 90,093 | 96,852 | 105,335 | 116,507 | 129,209 | 141,356 | 149,609 |
| Other | 1,550 | 1,268 | 1,215 | 1,171 | 1,418 | 1,576 | 4,453 | 4,067 | 3,466 | 3,466 | 3,452 |
| Interoffice Working Facilities | | | | | | | | | | | |
| Total Circuit Links | 2,702,141 | 2,935,085 | 4,287,654 | 4,756,430 | 5,245,925 | 6,107,816 | 6,134,728 | 8,564,658 | 9,828,726 | 10,690,256 | 10,835,682 |
| Loop Plant -- Central Office Terminations | | | | | | | | | | | |
| Total Equipped Channels | 31,742,421 | 33,070,338 | 34,669,704 | 36,022,283 | 37,866,890 | 39,550,588 | 40,957,871 | 42,025,575 | 49,435,188 | 51,081,973 | 39,822,163 |
| Copper | 28,821,672 | 29,291,200 | 29,995,720 | 30,351,794 | 30,903,216 | 31,270,774 | 31,917,878 | 31,849,537 | 37,493,164 | 38,176,168 | 30,263,142 |
| Fiber Digital Carrier | 2,919,937 | 3,778,341 | 4,673,140 | 5,669,647 | 6,962,832 | 8,278,972 | 9,039,151 | 10,175,104 | 11,940,618 | 12,883,709 | 9,557,876 |
| Other | 812 | 798 | 842 | 842 | 842 | 842 | 842 | 934 | 1,406 | 2,096 | 1,145 |
| Total Working Channels | 20,196,488 | 21,275,558 | 23,284,636 | 24,682,894 | 26,230,400 | 27,921,162 | 29,836,968 | 30,422,706 | 33,655,481 | 34,114,639 | 25,039,974 |
| Copper | 17,874,950 | 18,288,532 | 19,283,574 | 19,871,262 | 20,318,019 | 20,708,890 | 21,233,672 | 21,237,643 | 22,044,514 | 21,597,814 | 17,250,216 |
| Fiber Digital Carrier | 2,321,451 | 2,986,937 | 4,000,986 | 4,811,550 | 5,912,292 | 7,212,190 | 8,603,214 | 9,184,935 | 11,610,551 | 12,516,193 | 7,789,007 |
| Other | 87 | 90 | 77 | 82 | 89 | 82 | 82 | 128 | 416 | 632 | 751 |
| Other Transmission Facility Data | | | | | | | | | | | |
| Copper Pairs Term Main Frame (Loop Plant Only) | 26,382,231 | 26,433,408 | 26,451,200 | 26,527,293 | 26,342,776 | 26,703,438 | 27,082,625 | 26,602,864 | 31,771,617 | 32,464,246 | 26,813,386 |
| Fiber Strands Term in the CO (Loop Plant Only) | 52,591 | 59,663 | 73,260 | 106,710 | 138,364 | 157,957 | 185,416 | 205,840 | 226,360 | 248,433 | 310,092 |
| Fiber Term at Customer Premises DS1 Rate | 4,681 | 9,078 | 13,941 | 19,132 | 27,482 | 36,911 | 50,431 | 67,886 | 85,205 | 93,687 | 593,755 |
| Fiber Term at Customer Premises DS3 Rate & Higher | 5,490 | 3,294 | 4,034 | 4,559 | 5,353 | 6,847 | 8,974 | 35,492 | 94,022 | 107,998 | 112,931 |
| ISDN Capable Lines | NA | NA | NA | NA | NA | 25,918,582 | 15,841,265 | 13,049,642 | 13,111,821 | 12,636,844 | 16,230,309 |

NA· Not available

Source ARMIS Report 43-07

**Table 10 2**
**Transmission System Data**
**Total - All Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sheath Kilometers | | | | | | | | | | | |
| Total Sheath Kilometers | 5,825,538 | 5,631,823 | 5,570,853 | 5,553,702 | 5,587,572 | 5,664,315 | 5,763,419 | 5,846,319 | 5,683,568 | 5,769,882 | 5,711,875 |
| Copper | 5,248,771 | 5,281,958 | 5,185,466 | 5,127,707 | 5,124,940 | 5,163,039 | 5,212,873 | 5,255,778 | 5,063,534 | 5,097,955 | 5,017,883 |
| Fiber | 291,471 | 341,415 | 378,038 | 419,175 | 456,814 | 495,380 | 536,520 | 576,868 | 604,175 | 655,753 | 681,587 |
| Other | 285,296 | 8,451 | 7,350 | 6,819 | 5,819 | 5,896 | 14,026 | 13,672 | 15,860 | 16,174 | 12,406 |
| Interoffice Working Facilities | | | | | | | | | | | |
| Total Circuit Links | 19,926,411 | 20,533,013 | 23,293,421 | 25,385,271 | 24,387,840 | 28,847,081 | 32,231,481 | 41,873,877 | 47,960,986 | 52,221,937 | 52,226,424 |
| Loop Plant -- Central Office Terminations | | | | | | | | | | | |
| Total Equipped Channels | 227,730,736 | 248,436,477 | 254,793,596 | 263,768,547 | 255,430,475 | 264,429,362 | 279,341,845 | 299,779,275 | 313,014,677 | 356,758,489 | 362,470,008 |
| Copper | 217,154,922 | 221,879,025 | 222,353,743 | 226,953,330 | 227,384,081 | 230,903,175 | 236,490,113 | 239,486,801 | 246,638,738 | 253,939,285 | 248,684,364 |
| Fiber Digital Carrier | 10,569,994 | 26,549,664 | 32,433,491 | 36,809,055 | 28,041,605 | 33,515,370 | 42,846,429 | 60,287,936 | 66,371,982 | 102,815,393 | 113,783,074 |
| Other | 5,821 | 7,791 | 6,360 | 6,162 | 4,789 | 10,817 | 5,303 | 4,538 | 3,957 | 3,811 | 2,570 |
| Total Working Channels | 139,618,361 | 142,822,216 | 149,000,831 | 155,980,548 | 163,245,940 | 170,083,120 | 182,546,160 | 190,911,880 | 193,922,477 | 225,431,349 | 216,483,361 |
| Copper | 132,456,117 | 133,010,643 | 136,073,024 | 141,452,266 | 144,576,836 | 147,286,389 | 151,593,687 | 151,501,241 | 151,494,238 | 151,678,473 | 137,864,407 |
| Fiber Digital Carrier | 7,159,115 | 9,807,620 | 12,924,773 | 14,525,425 | 18,666,394 | 22,793,636 | 30,950,165 | 39,163,693 | 42,213,715 | 73,751,357 | 78,617,515 |
| Other | 3,131 | 3,955 | 3,035 | 2,857 | 2,710 | 3,095 | 2,308 | 246,946 | 214,524 | 1,519 | 1,439 |
| Other Transmission Facility Data | | | | | | | | | | | |
| Copper Pairs Term Main Frame (Loop Plant Only) | 209,059,369 | 212,060,160 | 210,515,830 | 212,867,099 | 213,115,863 | 215,534,261 | 218,990,613 | 218,470,177 | 217,441,743 | 218,397,896 | 215,320,122 |
| Fiber Strands Term in the CO (Loop Plant Only) | 476,713 | 598,657 | 982,625 | 1,203,705 | 1,465,877 | 1,651,999 | 2,019,697 | 2,125,055 | 2,881,827 | 3,267,300 | 3,008,735 |
| Fiber Term at Customer Premises DS1 Rate | 106,758 | 146,405 | 184,235 | 222,040 | 294,808 | 363,189 | 421,075 | 527,784 | 647,502 | 1,282,847 | 1,888,451 |
| Fiber Term at Customer Premises DS3 Rate & Higher | 14,824 | 16,251 | 19,963 | 22,699 | 32,352 | 29,893 | 47,205 | 92,534 | 167,284 | 227,831 | 253,213 |
| ISDN Capable Lines | NA | NA | NA | NA | NA | 105,949,659 | 107,514,215 | 122,963,106 | 116,839,259 | 105,059,057 | 105,956,829 |

NA Not available

Source ARMIS Report 43-07

**Table 10 2**
**Transmission System Data**
**Verizon - GTE Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sheath Kilometers | | | | | | | | | | | |
| Total Sheath Kilometers | 1,610,734 | 1,367,255 | 1,314,600 | 1,234,633 | 1,248,505 | 1,268,110 | 1,290,068 | 1,312,437 | 1,041,353 | 1,053,450 | 938,012 |
| Copper | 1,283,366 | 1,305,857 | 1,251,223 | 1,167,365 | 1,177,702 | 1,188,835 | 1,203,101 | 1,219,257 | 959,596 | 965,586 | 856,090 |
| Fiber | 53,065 | 61,398 | 63,377 | 67,268 | 70,803 | 79,275 | 86,966 | 93,180 | 81,757 | 87,864 | 81,922 |
| Other | 274,303 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Interoffice Working Facilities | | | | | | | | | | | |
| Total Circuit Links | 2,989,915 | 3,052,854 | 3,430,454 | 4,104,644 | 1,900,698 | 2,461,398 | 2,445,471 | 4,004,974 | 4,182,896 | 4,701,614 | 4,362,338 |
| Loop Plant -- Central Office Terminations | | | | | | | | | | | |
| Total Equipped Channels | 28,018,835 | 28,601,394 | 28,043,406 | 30,593,828 | 30,128,527 | 30,278,580 | 31,455,009 | 42,599,694 | 44,586,214 | 41,943,472 | 42,126,127 |
| Copper | 26,644,991 | 26,989,645 | 26,280,274 | 28,716,964 | 28,146,972 | 27,709,878 | 28,240,814 | 29,880,881 | 28,590,183 | 25,616,859 | 24,678,550 |
| Fiber Digital Carrier | 1,370,617 | 1,607,049 | 1,758,085 | 1,871,908 | 1,978,522 | 2,559,245 | 3,209,964 | 12,715,677 | 15,994,041 | 16,325,472 | 17,446,656 |
| Other | 3,227 | 4,700 | 5,047 | 4,956 | 3,033 | 9,457 | 4,231 | 3,136 | 1,990 | 1,141 | 921 |
| Total Working Channels | 18,770,008 | 18,631,166 | 18,809,320 | 19,749,733 | 20,422,201 | 20,654,471 | 21,925,330 | 23,991,380 | 23,204,649 | 22,569,689 | 21,727,913 |
| Copper | 17,846,681 | 17,514,835 | 17,636,318 | 18,476,993 | 18,981,609 | 18,850,077 | 19,726,313 | 18,207,964 | 16,585,744 | 16,781,266 | 15,789,637 |
| Fiber Digital Carrier | 921,388 | 1,113,803 | 1,170,276 | 1,270,132 | 1,438,571 | 1,801,556 | 2,196,916 | 5,536,831 | 6,405,057 | 5,787,826 | 5,937,838 |
| Other | 1,939 | 2,528 | 2,726 | 2,608 | 2,021 | 2,838 | 2,101 | 246,585 | 213,848 | 597 | 438 |
| Other Transmission Facility Data | | | | | | | | | | | |
| Copper Pairs Term Main Frame (Loop Plant Only) | 26,610,870 | 28,240,402 | 26,074,368 | 28,707,803 | 27,804,891 | 29,713,980 | 30,313,513 | 29,094,240 | 21,787,495 | 21,895,961 | 22,039,455 |
| Fiber Strands Term in the CO (Loop Plant Only) | 26,504 | 38,498 | 55,481 | 71,762 | 80,372 | 93,238 | 126,604 | 43,739 | 39,394 | 33,298 | 31,098 |
| Fiber Term at Customer Premises DS1 Rate | 4,455 | 6,540 | 7,941 | 14,619 | 16,469 | 23,480 | 4,846 | 11,316 | 289 | 214 | 172 |
| Fiber Term at Customer Premises DS3 Rate & Higher | 2,031 | 3,825 | 4,436 | 4,546 | 11,043 | 2,173 | 4,439 | 224 | 960 | 980 | 637 |
| ISDN Capable Lines | NA | NA | NA | NA | NA | 12,935,628 | 13,732,469 | 16,265,613 | 18,031,436 | 12,148,900 | 11,606,200 |

NA Not available

Source ARMIS Report 43-07

**Table 10 2**
**Transmission System Data**
**Qwest Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sheath Kilometers | | | | | | | | | | | |
| Total Sheath Kilometers | 743,027 | 757,868 | 750,756 | 753,942 | 722,753 | 717,084 | 722,157 | 735,920 | 754,162 | 762,412 | 770,660 |
| Copper | 699,219 | 707,384 | 694,797 | 691,844 | 660,393 | 653,205 | 650,929 | 662,816 | 675,009 | 676,615 | 684,193 |
| Fiber | 43,808 | 50,485 | 55,960 | 62,098 | 62,360 | 63,880 | 65,171 | 66,986 | 69,906 | 76,585 | 80,891 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 6,057 | 6,119 | 9,247 | 9,212 | 5,576 |
| Interoffice Working Facilities | | | | | | | | | | | |
| Total Circuit Links | 2,175,630 | 2,315,598 | 2,569,216 | 2,802,203 | 3,178,552 | 3,561,748 | 4,129,315 | 5,232,282 | 6,152,970 | 6,926,823 | 7,018,987 |
| Loop Plant – Central Office Terminations | | | | | | | | | | | |
| Total Equipped Channels | 23,533,213 | 23,876,582 | 24,088,839 | 24,246,870 | 25,284,411 | 24,893,900 | 27,316,968 | 28,023,288 | 28,733,473 | 29,643,140 | 30,106,628 |
| Copper | 22,956,294 | 23,170,964 | 23,393,955 | 23,561,093 | 23,500,796 | 23,193,518 | 25,517,759 | 25,361,821 | 25,581,184 | 25,939,651 | 26,077,832 |
| Fiber Digital Carrier | 575,314 | 703,502 | 694,588 | 685,674 | 1,782,962 | 1,699,888 | 1,799,003 | 2,661,211 | 3,152,009 | 3,703,244 | 4,028,568 |
| Other | 1,605 | 2,116 | 296 | 103 | 653 | 494 | 206 | 256 | 280 | 245 | 228 |
| Total Working Channels | 14,175,249 | 14,809,462 | 15,322,355 | 15,347,150 | 16,359,345 | 17,195,446 | 17,455,809 | 18,011,061 | 18,009,155 | 17,058,921 | 16,260,389 |
| Copper | 13,846,854 | 14,359,158 | 14,863,489 | 14,873,448 | 15,232,212 | 16,113,600 | 16,222,185 | 16,270,241 | 15,887,131 | 14,607,962 | 14,400,788 |
| Fiber Digital Carrier | 327,441 | 449,121 | 458,790 | 473,650 | 1,126,650 | 1,081,695 | 1,233,523 | 1,740,715 | 2,121,920 | 2,450,864 | 1,859,511 |
| Other | 954 | 1,183 | 76 | 52 | 483 | 151 | 101 | 105 | 104 | 95 | 90 |
| Other Transmission Facility Data | | | | | | | | | | | |
| Copper Pairs Term Main Frame (Loop Plant Only) | 22,015,832 | 22,128,231 | 22,179,411 | 22,168,426 | 22,291,697 | 20,463,591 | 21,558,602 | 21,606,866 | 21,572,942 | 21,653,395 | 21,724,140 |
| Fiber Strands Term in the CO (Loop Plant Only) | 65,444 | 73,993 | 83,313 | 81,953 | 112,185 | 123,691 | 174,430 | 202,329 | 238,802 | 299,315 | 309,154 |
| Fiber Term at Customer Premises DS1 Rate | 11,837 | 20,010 | 24,386 | 28,875 | 30,109 | 46,296 | 91,105 | 136,878 | 267,251 | 316,665 | 349,948 |
| Fiber Term at Customer Premises DS3 Rate & Higher | 1,434 | 1,066 | 1,297 | 1,289 | 1,223 | 1,142 | 6,085 | 28,354 | 38,224 | 51,546 | 60,366 |
| ISDN Capable Lines | NA | NA | NA | NA | NA | 9,236,841 | 9,650,185 | 9,983,398 | 9,922,088 | 9,012,052 | 8,426,381 |

NA Not available

Source ARMIS Report 43-07

include non-Bell carriers subject to price-cap regulation.[3] Second, the Commission included service quality reports in the Automated Reporting Management Information System (ARMIS).[4] Third, the Commission ordered significant changes to the kinds of data these carriers had to report.[5] Following these developments, the Commission released service quality summary reports in February 1993, March 1994, March 1996, September 1998, December 1999, December 2001, and January 2003.

In 1996, pursuant to requirements in the Telecommunications Act of 1996,[6] the Commission reduced the frequency of the filed data from quarterly to annual submissions.[7] In May 1997, relevant definitions were clarified further. These changes have been reflected starting with data covering the 1997 calendar year.

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3 *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Second Report and Order, 5 FCC Rcd 6786, 6827-31 (1990) (*LEC Price Cap Order*) (establishing the current service quality monitoring program and incorporating the service quality reports into the ARMIS program), Erratum, 5 FCC Rcd 7664 (1990), *modified on recon.*, 6 FCC Rcd 2637 (1991), *aff'd sub nom , Nat'l Rural Telecom Ass'n v. FCC*, 988 F.2d 174 (D.C. Cir. 1993). The incumbent local exchange carriers that are rate-of-return regulated are not subject to federal service quality reporting requirements.

4 *LEC Price Cap Order*, 5 FCC Rcd at 6827-30. The ARMIS database includes a variety of mechanized company financial and infrastructure reports in addition to the quality-of-service reports. Most data are available disaggregated to a study area or state level.

5 *Id.*; *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Memorandum Opinion and Order, 6 FCC Rcd 2974 (1991) (*Service Quality Order*), *recon.*, 6 FCC Rcd 7482 (1991). Previously the Common Carrier Bureau had collected data on five basic service quality measurements from the Bell Operating Companies. These were customer satisfaction levels, dial tone delay, transmission quality, on time service orders, and percentage of call blocking due to equipment failure.

6 *Telecommunications Act of 1996*, Pub. L. No. 104-104, 110 Stat. 56.

7 Orders implementing filing frequency and other reporting requirement changes associated with implementation of the Telecommunications Act of 1996 are as follows: *Implementation of the Telecommunications Act of 1996: Reform of Filing Requirements and Carrier Classifications*, CC Docket No. 96-193, Order and Notice of Proposed Rulemaking, 11 FCC Rcd 11716 (1996); *Revision of ARMIS Quarterly Report (FCC Report 43-01) et al.*, CC Docket No. 96-193, Order, 11 FCC Rcd 22508 (1996); *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Memorandum Opinion and Order, 12 FCC Rcd 8115 (1997); *Revision of ARMIS Annual Summary Report (FCC Report 43-01) et al.*, AAD No. 95-91, Order, 12 FCC Rcd 21831 (1997).

**Table 10 2**
**Transmission System Data**
**SBC Pacific Telesis Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sheath Kilometers | | | | | | | | | | | |
| Total Sheath Kilometers | 351,748 | 351,695 | 343,658 | 346,127 | 349,697 | 363,726 | 368,122 | 363,304 | 386,093 | 394,058 | 382,326 |
| Copper | 336,461 | 334,674 | 324,942 | 325,537 | 327,040 | 339,207 | 341,563 | 334,493 | 355,133 | 359,288 | 343,317 |
| Fiber | 13,412 | 15,814 | 17,598 | 19,472 | 21,513 | 23,375 | 25,416 | 27,648 | 29,797 | 33,227 | 37,466 |
| Other | 1,875 | 1,207 | 1,118 | 1,118 | 1,144 | 1,144 | 1,144 | 1,163 | 1,163 | 1,543 | 1,543 |
| Interoffice Working Facilities | | | | | | | | | | | |
| Total Circuit Links | 2,104,431 | 2,137,179 | 2,568,706 | 2,646,904 | 2,240,779 | 3,369,967 | 3,760,855 | 4,352,282 | 5,032,433 | 5,141,975 | 4,792,666 |
| Loop Plant -- Central Office Terminations | | | | | | | | | | | |
| Total Equipped Channels | 25,576,494 | 26,287,306 | 26,447,355 | 26,850,298 | 27,732,011 | 28,635,080 | 29,739,661 | 30,729,411 | 33,317,471 | 34,687,259 | 34,988,223 |
| Copper | 25,239,670 | 25,859,697 | 25,914,609 | 26,178,875 | 26,951,967 | 27,548,645 | 28,348,883 | 29,062,676 | 31,479,491 | 32,170,875 | 32,337,338 |
| Fiber Digital Carrier | 336,737 | 427,522 | 532,661 | 671,162 | 779,783 | 1,086,411 | 1,390,754 | 1,666,523 | 1,837,699 | 2,516,055 | 2,650,609 |
| Other | 87 | 87 | 85 | 261 | 261 | 24 | 24 | 212 | 281 | 329 | 276 |
| Total Working Channels | 15,624,516 | 15,840,904 | 16,110,206 | 16,877,850 | 17,719,765 | 18,254,128 | 20,103,518 | 20,963,786 | 23,081,376 | 22,773,561 | 22,080,915 |
| Copper | 15,400,695 | 15,556,249 | 15,758,760 | 16,448,199 | 17,212,991 | 17,569,012 | 19,235,044 | 19,936,233 | 21,930,468 | 21,380,638 | 20,803,417 |
| Fiber Digital Carrier | 223,744 | 284,575 | 351,364 | 429,536 | 506,657 | 685,092 | 868,450 | 1,027,425 | 1,150,752 | 1,392,728 | 1,277,338 |
| Other | 77 | 80 | 82 | 115 | 117 | 24 | 24 | 128 | 156 | 195 | 160 |
| Other Transmission Facility Data | | | | | | | | | | | |
| Copper Pairs Term Main Frame (Loop Plant Only) | 24,098,663 | 24,632,897 | 24,577,002 | 24,619,462 | 25,055,625 | 25,412,880 | 25,953,289 | 26,639,408 | 27,102,231 | 27,403,873 | 27,620,878 |
| Fiber Strands Term in the CO (Loop Plant Only) | 35,565 | 39,830 | 33,538 | 34,692 | 37,156 | 88,192 | 97,385 | 101,516 | 115,670 | 139,598 | 182,250 |
| Fiber Term at Customer Premises DS1 Rate | 628 | 701 | 756 | 655 | 719 | 762 | 854 | 894 | 0 | 0 | 0 |
| Fiber Term at Customer Premises DS3 Rate & Higher | 1,710 | 2,410 | 3,108 | 4,047 | 3,113 | 6,145 | 7,432 | 9,456 | 13,132 | 16,805 | 19,925 |
| ISDN Capable Lines | NA | NA | NA | NA | NA | 12,803,002 | 14,007,670 | 14,466,224 | 15,930,217 | 14,563,646 | 15,240,270 |

NA Not available

Source ARMIS Report 43-07

The key items contained in the tables are summarized below. Installation, maintenance and customer complaint data are shown in Table 9.1 and switch downtime and trunk servicing data are shown in Table 9.2. Installation and maintenance data are presented separately for services provided to end users and for interexchange carrier access facilities. Outage data categorized by cause are shown in Table 9.3. Customer perception data are contained in Table 9.4 and the associated survey sample sizes are contained in Table 9.5. The tables cover data for 2002. This section displays a number of data elements that have remained roughly comparable over the past few years. More detailed information on the raw data from which this section has been developed is contained on the Commission's website for the ARMIS database noted above and in the report noted in footnote 2. In addition, complete data descriptions are available in several Commission Orders. [10]

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calculate composite installation interval data by summing the individual study area results multiplied by the number of installation orders reported for each study area and then dividing the result by the total number of orders.

10 Orders implementing filing frequency and other reporting requirement changes associated with implementation of the Telecommunications Act of 1996 are as follows: *Implementation of the Telecommunications Act of 1996: Reform of Filing Requirements and Carrier Classifications*, Order and Notice of Proposed Rulemaking, 11 FCC Rcd 11716 (1996); *Revision of ARMIS Quarterly Report (FCC Report 43-01) et al.*, Order, 11 FCC Rcd 22508 (1996); *Policy and Rules Concerning Rates for Dominant Carriers*, Memorandum Opinion and Order, 12 FCC Rcd 8115 (1997); *Revision of ARMIS Annual Summary Report (FCC Report 43-01) et al.*, Order, 12 FCC Rcd 21831 (1997).

**Table 10 2**
**Transmission System Data**
**Verizon - Bell Atlantic Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sheath Kilometers | | | | | | | | | | | |
| Total Sheath Kilometers | 949,646 | 958,275 | 967,084 | 973,148 | 979,664 | 992,970 | 1,008,405 | 1,022,395 | 1,038,094 | 1,046,999 | 1,080,551 |
| Copper | 880,017 | 877,352 | 875,728 | 872,797 | 871,984 | 873,583 | 876,739 | 879,768 | 886,323 | 886,147 | 912,134 |
| Fiber | 66,619 | 78,415 | 89,132 | 98,425 | 107,141 | 118,987 | 130,872 | 141,888 | 151,432 | 160,494 | 168,185 |
| Other | 3,011 | 2,507 | 2,224 | 1,927 | 539 | 401 | 794 | 739 | 339 | 357 | 232 |
| Interoffice Working Facilities | | | | | | | | | | | |
| Total Circuit Links | 5,142,664 | 5,159,173 | 5,201,204 | 5,213,347 | 5,357,022 | 5,853,744 | 6,834,238 | 8,687,801 | 10,262,940 | 11,001,835 | 11,120,804 |
| Loop Plant -- Central Office Terminations | | | | | | | | | | | |
| Total Equipped Channels | 65,747,651 | 82,980,954 | 86,021,165 | 90,107,803 | 77,287,239 | 80,327,245 | 86,996,490 | 90,777,075 | 89,384,018 | 125,406,917 | 138,190,365 |
| Copper | 62,105,433 | 65,122,822 | 65,275,522 | 65,663,036 | 65,333,981 | 66,426,101 | 67,001,475 | 66,639,008 | 65,672,215 | 71,057,709 | 73,002,465 |
| Fiber Digital Carrier | 3,642,219 | 17,858,134 | 20,745,643 | 24,444,767 | 11,953,258 | 13,901,144 | 19,995,015 | 24,138,067 | 23,711,803 | 54,349,208 | 65,187,900 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Working Channels | 38,168,035 | 40,222,933 | 40,922,175 | 43,690,966 | 45,428,073 | 48,600,177 | 53,815,181 | 57,437,438 | 55,422,738 | 90,645,132 | 94,487,929 |
| Copper | 36,121,824 | 36,776,495 | 36,387,944 | 37,927,283 | 37,998,341 | 39,429,529 | 39,221,423 | 39,858,933 | 39,081,964 | 43,800,016 | 37,580,147 |
| Fiber Digital Carrier | 2,046,213 | 3,446,439 | 4,534,231 | 5,763,683 | 7,429,732 | 9,170,648 | 14,593,758 | 17,578,505 | 16,340,774 | 46,845,116 | 56,907,782 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Transmission Facility Data | | | | | | | | | | | |
| Copper Pairs Term Main Frame (Loop Plant Only) | 59,659,102 | 60,557,866 | 60,577,213 | 60,635,648 | 60,742,136 | 61,342,895 | 61,875,146 | 61,342,016 | 60,962,933 | 60,979,463 | 62,622,453 |
| Fiber Strands Term in the CO (Loop Plant Only) | 213,998 | 273,279 | 604,501 | 704,901 | 804,787 | 872,210 | 1,088,063 | 1,247,579 | 1,799,523 | 1,942,003 | 1,487,203 |
| Fiber Term at Customer Premises DS1 Rate | 33,090 | 47,833 | 65,929 | 78,266 | 103,307 | 131,829 | 106,632 | 144,981 | 85,648 | 604,557 | 652,777 |
| Fiber Term at Customer Premises DS3 Rate & Higher | 676 | 1,306 | 1,767 | 2,333 | 3,381 | 4,094 | 9,515 | 11,225 | 10,090 | 36,396 | 43,716 |
| ISDN Capable Lines | NA | NA | NA | NA | NA | 31,943,090 | 40,648,786 | 47,540,926 | 38,205,741 | 35,587,450 | 34,658,178 |

NA Not available

Source ARMIS Report 43-07

**Table 9.2**
**Switch Downtime & Trunk Blocking**
**Company Comparison - 2002**

| Company | BellSouth | Qwest | SBC Ameritech | SBC Pacific | SBC Southwestern | Verizon North | Verizon South | Verizon GTE | Sprint |
|---|---|---|---|---|---|---|---|---|---|
| Total Access Lines in Thousands | 22,955 | 15,682 | 19,151 | 17,248 | 15,294 | 17,442 | 21,368 | 16,894 | 7,953 |
| Total Trunk Groups | 3,577 | 3,378 | 1,111 | 1,581 | 802 | 826 | 1,005 | 1,669 | 7,436 |
| Total Switches | 1,637 | 1,337 | 1,455 | 778 | 1,652 | 1,279 | 1,344 | 3,130 | 1,563 |
| Switches with Downtime | | | | | | | | | |
| Number of Switches | 68 | 252 | 201 | 32 | 71 | 34 | 28 | 40 | 136 |
| As a Percentage of Total Switches | 4 2% | 18 8% | 13 8% | 4 1% | 4 3% | 2 7% | 2 1% | 1 3% | 8 7% |
| Average Switch Downtime in Seconds per Switch | | | | | | | | | |
| For All Events | 97 8 | 95 0 | 90 5 | 4 2 | 49 0 | 36 3 | 31 2 | 117 2 | 460 8 |
| For Unscheduled Events Over 2 Minutes | 88 0 | 78 0 | 29 5 | 3 2 | 44 7 | 33 6 | 30 3 | 118 9 | 381 1 |
| For Unscheduled Downtime More Than 2 Minutes | | | | | | | | | |
| Number of Occurrences or Events | 33 | 42 | 25 | 8 | 11 | 26 | 13 | 42 | 71 |
| Events per Hundred Switches | 2 0 | 3 1 | 1 7 | 1 0 | 0 7 | 2 0 | 1 0 | 1 3 | 4 5 |
| Events per Million Access Lines | 1 44 | 2 68 | 1 31 | 0 46 | 0 72 | 1 49 | 0 61 | 2 49 | 8 93 |
| Average Outage Duration in Minutes | 72 7 | 41 4 | 28 6 | 5 1 | 111 8 | 27 6 | 52 2 | 147 7 | 139 8 |
| Average Lines Affected per Event in Thousands | 21 8 | 6 3 | 28 1 | 37 5 | 23 8 | 23 7 | 22 2 | 6 9 | 12 3 |
| Outage Line-Minutes per Event in Thousands | 766 9 | 218 7 | 644 9 | 171 9 | 2,900 1 | 483 1 | 163 6 | 859 8 | 1,896 0 |
| Outage Line-Minutes per 1,000 Access Lines | 1,102 5 | 585 7 | 841 9 | 79 7 | 2,085 8 | 720 1 | 99 5 | 2,137 6 | 16,925 4 |
| For Scheduled Downtime More Than 2 Minutes | | | | | | | | | |
| Number of Occurrences or Events | 4 | 51 | 58 | 0 | 7 | 3 | 3 | 1 | 64 |
| Events per Hundred Switches | 0 2 | 3 8 | 4 0 | 0 0 | 0 4 | 0 2 | 0 2 | 0 0 | 4 1 |
| Events per Million Access Lines | 0 17 | 3 25 | 3 03 | 0 00 | 0 46 | 0 17 | 0 14 | 0 06 | 8.05 |
| Average Outage Duration in Minutes | 5 1 | 4 0 | 24 8 | NA | 14 3 | 10 7 | 2 3 | NA | 32.4 |
| Avg. Lines Affected per Event in Thousands | 8 5 | 11 2 | 18 5 | NA | 52 3 | 20 8 | 23 6 | NA | 9 9 |
| Outage Line-Minutes per Event in Thousands | 28 1 | 53 3 | 539 9 | NA | 243 6 | 203 9 | 55 6 | NA | 364 7 |
| Outage Line-Minutes per 1,000 Access Lines | 4 9 | 173 4 | 1,635 2 | 0 0 | 111 5 | 35 1 | 7 8 | 0 4 | 2,934 9 |
| % Common Trunk Grps Exceeding Blocking Objectives | 2 60% | 2 19% | 8 37% | 1 45% | 0 25% | 3 63% | 8 26% | 0 06% | 0 15% |

NA Not available

Please refer to text for notes and data qualifications

**Table 10 2**
**Transmission System Data**
**Verizon - GTE Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sheath Kilometers | | | | | | | | | | | |
| Total Sheath Kilometers | 1,610,734 | 1,367,255 | 1,314,600 | 1,234,633 | 1,248,505 | 1,268,110 | 1,290,068 | 1,312,437 | 1,041,353 | 1,053,450 | 938,012 |
| Copper | 1,283,366 | 1,305,857 | 1,251,223 | 1,167,365 | 1,177,702 | 1,188,835 | 1,203,101 | 1,219,257 | 959,596 | 965,586 | 856,090 |
| Fiber | 53,065 | 61,398 | 63,377 | 67,268 | 70,803 | 79,275 | 86,966 | 93,180 | 81,757 | 87,864 | 81,922 |
| Other | 274,303 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Interoffice Working Facilities | | | | | | | | | | | |
| Total Circuit Links | 2,989,915 | 3,052,854 | 3,430,454 | 4,104,644 | 1,900,698 | 2,461,398 | 2,445,471 | 4,004,974 | 4,182,896 | 4,701,614 | 4,362,338 |
| Loop Plant -- Central Office Terminations | | | | | | | | | | | |
| Total Equipped Channels | 28,018,835 | 28,601,394 | 28,043,406 | 30,593,828 | 30,128,527 | 30,278,580 | 31,455,009 | 42,599,694 | 44,586,214 | 41,943,472 | 42,126,127 |
| Copper | 26,644,991 | 26,989,645 | 26,280,274 | 28,716,964 | 28,146,972 | 27,709,878 | 28,240,814 | 29,880,881 | 28,590,183 | 25,616,859 | 24,678,550 |
| Fiber Digital Carrier | 1,370,617 | 1,607,049 | 1,758,085 | 1,871,908 | 1,978,522 | 2,559,245 | 3,209,964 | 12,715,677 | 15,994,041 | 16,325,472 | 17,446,656 |
| Other | 3,227 | 4,700 | 5,047 | 4,956 | 3,033 | 9,457 | 4,231 | 3,136 | 1,990 | 1,141 | 921 |
| Total Working Channels | 18,770,008 | 18,631,166 | 18,809,320 | 19,749,733 | 20,422,201 | 20,654,471 | 21,925,330 | 23,991,380 | 23,204,649 | 22,569,689 | 21,727,913 |
| Copper | 17,846,681 | 17,514,835 | 17,636,318 | 18,476,993 | 18,981,609 | 18,850,077 | 19,726,313 | 18,207,964 | 16,585,744 | 16,781,266 | 15,789,637 |
| Fiber Digital Carrier | 921,388 | 1,113,803 | 1,170,276 | 1,270,132 | 1,438,571 | 1,801,556 | 2,196,916 | 5,536,831 | 6,405,057 | 5,787,826 | 5,937,838 |
| Other | 1,939 | 2,528 | 2,726 | 2,608 | 2,021 | 2,838 | 2,101 | 246,585 | 213,848 | 597 | 438 |
| Other Transmission Facility Data | | | | | | | | | | | |
| Copper Pairs Term Main Frame (Loop Plant Only) | 26,610,870 | 28,240,402 | 26,074,368 | 28,707,803 | 27,804,891 | 29,713,980 | 30,313,513 | 29,094,240 | 21,787,495 | 21,895,961 | 22,039,455 |
| Fiber Strands Term in the CO (Loop Plant Only) | 26,504 | 38,498 | 55,481 | 71,762 | 80,372 | 93,238 | 126,604 | 43,739 | 39,394 | 33,298 | 31,098 |
| Fiber Term at Customer Premises DS1 Rate | 4,455 | 6,540 | 7,941 | 14,619 | 16,469 | 23,480 | 4,846 | 11,316 | 289 | 214 | 172 |
| Fiber Term at Customer Premises DS3 Rate & Higher | 2,031 | 3,825 | 4,436 | 4,546 | 11,043 | 2,173 | 4,439 | 224 | 960 | 980 | 637 |
| ISDN Capable Lines | NA | NA | NA | NA | NA | 12,935,628 | 13,732,469 | 16,265,613 | 18,031,436 | 12,148,900 | 11,606,200 |

NA. Not available

Source ARMIS Report 43-07

**Table 9.4**
**Customer Perception Surveys - Percent of Customers Dissatisfied**
**Company Comparision - 2002**

| Company | BellSouth | Qwest | SBC Amentech | SBC Pacific | SBC Southwestern | Verizon North | Verizon South | Verizon GTE | Sprint |
|---|---|---|---|---|---|---|---|---|---|
| Installations: | | | | | | | | | |
| Residential | 10 25 | 7 17 | 10 67 | 6 35 | 8 12 | 5 26 | 5 07 | 4 36 | NA |
| Small Business | 9 58 | 15 93 | 11 85 | 6 30 | 8 87 | 9.20 | 8 16 | 7 69 | NA |
| Large Business | 7 33 | NA | 10 69 | 5 55 | 6 44 | 1 84 | 2 73 | 4 79 | NA |
| Repairs: | | | | | | | | | |
| Residential | 14 60 | 9.30 | 14 57 | 7 25 | 9 63 | 15 96 | 14 62 | 12 36 | NA |
| Small Business | 8.49 | 11 82 | 12 81 | 5 61 | 6 76 | 11 89 | 9 53 | 9 05 | NA |
| Large Business | 6 67 | NA | 11 67 | 4 08 | 5 90 | 4 39 | 2 98 | 4 42 | NA |
| Business Office: | | | | | | | | | |
| Residential | 12 26 | 3.63 | 13.23 | 5 96 | 8 88 | 6 78 | 5 71 | 6 20 | NA |
| Small Business | 14 26 | 7.09 | 12.48 | 5 79 | 7.67 | 7 67 | 8 73 | 9 04 | NA |
| Large Business | 9 00 | NA | 10 99 | 5 88 | 6.67 | 2 21 | 6 86 | 5 73 | NA |

NA Not available

Please refer to text for notes and data qualifications

**Table 10 2**
**Transmission System Data**
**SBC Southwestern Bell Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sheath Kilometers | | | | | | | | | | | |
| Total Sheath Kilometers | 637,840 | 646,283 | 652,224 | 662,108 | 676,945 | 685,526 | 700,914 | 715,915 | 734,982 | 749,279 | 758,096 |
| Copper | 605,825 | 608,238 | 609,725 | 612,764 | 617,776 | 622,960 | 634,236 | 645,280 | 657,915 | 665,754 | 671,033 |
| Fiber | 28,407 | 35,548 | 40,621 | 47,530 | 57,228 | 60,561 | 66,074 | 70,023 | 76,442 | 82,893 | 86,431 |
| Other | 3,608 | 2,497 | 1,878 | 1,814 | 1,942 | 2,005 | 604 | 612 | 625 | 632 | 632 |
| Interoffice Working Facilities | | | | | | | | | | | |
| Total Circuit Links | 2,028,241 | 2,132,469 | 2,271,891 | 2,583,685 | 2,887,611 | 3,374,225 | 4,013,947 | 5,040,973 | 5,747,378 | 6,133,750 | 6,011,924 |
| Loop Plant -- Central Office Terminations | | | | | | | | | | | |
| Total Equipped Channels | 23,280,470 | 22,801,616 | 23,675,325 | 23,990,229 | 23,765,557 | 26,003,155 | 26,573,984 | 27,781,986 | 28,466,090 | 33,579,340 | 35,090,790 |
| Copper | 22,835,410 | 21,895,338 | 22,010,813 | 23,356,682 | 22,976,132 | 24,957,200 | 25,399,685 | 26,437,109 | 27,047,348 | 30,533,897 | 31,634,863 |
| Fiber Digital Carrier | 444,970 | 906,188 | 1,664,422 | 633,547 | 789,425 | 1,045,955 | 1,174,299 | 1,344,877 | 1,418,742 | 3,045,443 | 3,455,927 |
| Other | 90 | 90 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Working Channels | 13,400,320 | 13,431,477 | 15,446,486 | 15,917,610 | 16,579,937 | 16,305,661 | 17,626,797 | 17,857,937 | 18,053,445 | 16,482,996 | 15,888,373 |
| Copper | 13,047,301 | 12,703,861 | 14,046,786 | 15,376,311 | 15,937,288 | 15,532,286 | 16,738,819 | 16,854,720 | 16,970,439 | 15,386,074 | 14,767,650 |
| Fiber Digital Carrier | 352,945 | 727,542 | 1,399,626 | 541,299 | 642,649 | 773,375 | 887,978 | 1,003,217 | 1,083,006 | 1,096,922 | 1,120,723 |
| Other | 74 | 74 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Transmission Facility Data | | | | | | | | | | | |
| Copper Pairs Term Main Frame (Loop Plant Only) | 22,047,874 | 21,379,496 | 22,010,903 | 21,990,829 | 22,185,268 | 22,926,817 | 22,904,300 | 23,579,244 | 24,032,521 | 24,062,333 | 24,290,865 |
| Fiber Strands Term in the CO (Loop Plant Only) | 41,947 | 56,560 | 66,497 | 124,026 | 189,365 | 193,409 | 206,178 | 158,881 | 256,736 | 329,584 | 388,011 |
| Fiber Term at Customer Premises DS1 Rate | 33,162 | 38,568 | 44,622 | 48,552 | 77,598 | 77,545 | 113,701 | 103,739 | 130,287 | 160,740 | 172,872 |
| Fiber Term at Customer Premises DS3 Rate & Higher | 1,612 | 1,916 | 2,566 | 2,733 | 4,365 | 5,039 | 5,615 | 1,995 | 3,668 | 4,523 | 4,828 |
| ISDN Capable Lines | NA | NA | NA | NA | NA | 3,773,275 | 4,157,674 | 12,158,269 | 12,168,819 | 12,055,812 | 11,177,094 |

NA Not available

Source ARMIS Report 43-07

**Table 10 2**
**Transmission System Data**
**SBC Ameritech Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sheath Kilometers | | | | | | | | | | | |
| Total Sheath Kilometers | 552,792 | 556,814 | 537,133 | 562,934 | 575,407 | 586,712 | 598,858 | 601,779 | 612,988 | 629,321 | 636,725 |
| Copper | 522,374 | 521,187 | 498,239 | 519,775 | 526,955 | 533,491 | 541,197 | 540,170 | 546,336 | 555,024 | 558,670 |
| Fiber | 29,468 | 34,655 | 37,980 | 42,370 | 47,676 | 52,450 | 56,687 | 60,637 | 65,632 | 73,334 | 77,084 |
| Other | 950 | 971 | 915 | 789 | 776 | 771 | 974 | 972 | 1,020 | 964 | 971 |
| Interoffice Working Facilities | | | | | | | | | | | |
| Total Circuit Links | 2,783,389 | 2,800,655 | 2,964,296 | 3,278,058 | 3,577,253 | 4,118,183 | 4,912,927 | 5,990,907 | 6,753,643 | 7,625,684 | 8,084,023 |
| Loop Plant -- Central Office Terminations | | | | | | | | | | | |
| Total Equipped Channels | 29,831,652 | 30,818,287 | 31,847,802 | 31,957,236 | 33,365,840 | 34,740,814 | 36,301,862 | 37,842,246 | 39,092,223 | 40,436,388 | 42,145,712 |
| Copper | 28,551,452 | 29,549,359 | 29,482,850 | 29,124,886 | 29,571,017 | 29,797,059 | 30,063,619 | 30,255,769 | 30,775,153 | 30,444,126 | 30,690,174 |
| Fiber Digital Carrier | 1,280,200 | 1,268,928 | 2,364,952 | 2,832,350 | 3,794,823 | 4,943,755 | 6,238,243 | 7,586,477 | 8,317,070 | 9,992,262 | 11,455,538 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Working Channels | 19,283,745 | 18,610,716 | 19,105,653 | 19,714,345 | 20,506,219 | 21,152,075 | 21,782,557 | 22,227,572 | 22,495,633 | 21,786,411 | 20,997,868 |
| Copper | 18,317,812 | 17,811,513 | 18,096,153 | 18,478,770 | 18,896,376 | 19,082,995 | 19,216,231 | 19,135,507 | 18,993,978 | 18,124,703 | 17,272,552 |
| Fiber Digital Carrier | 965,933 | 799,203 | 1,009,500 | 1,235,575 | 1,609,843 | 2,069,080 | 2,566,326 | 3,092,065 | 3,501,655 | 3,661,708 | 3,725,316 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Transmission Facility Data | | | | | | | | | | | |
| Copper Pairs Term Main Frame (Loop Plant Only) | 28,244,797 | 28,687,860 | 28,645,733 | 28,217,638 | 28,693,470 | 28,970,660 | 29,303,138 | 29,605,539 | 30,212,004 | 29,938,625 | 30,208,945 |
| Fiber Strands Term in the CO (Loop Plant Only) | 40,664 | 56,834 | 66,035 | 79,661 | 103,648 | 123,302 | 141,621 | 165,171 | 205,342 | 275,069 | 300,927 |
| Fiber Term at Customer Premises DS1 Rate | 18,905 | 23,675 | 26,660 | 31,941 | 39,124 | 46,366 | 53,506 | 62,090 | 78,822 | 106,984 | 118,927 |
| Fiber Term at Customer Premises DS3 Rate & Higher | 1,871 | 2,434 | 2,755 | 3,192 | 3,874 | 4,453 | 5,145 | 5,788 | 7,188 | 9,583 | 10,810 |
| ISDN Capable Lines | NA | NA | NA | NA | NA | 9,339,241 | 9,476,166 | 9,499,034 | 9,469,137 | 9,054,353 | 8,618,397 |

NA Not available

Source ARMIS Report 43-07

on hybrid copper/fiber interfaces in the network but the carriers have requested proprietary treatment for the data. As a result, the data are not provided in this public report.

The ARMIS 43-07 reports are filed only by those local exchange companies originally subject to mandatory price-cap regulation--the Bell operating companies (BOCs).[5] Together, these large companies are estimated to provide service to more than 90% of the nation's telephone lines. The data are generally filed at the study area level, which typically consists of a company's operations within a state. The state-by-state data are available from the Commission's ARMIS web page at <http://www.fcc.gov/wcb/eafs/>.[6] This web page has been redesigned and provides more features than were previously available. The information summarized in this report is organized into two sets of tables with the following designations: Table 10.1 shows switching system data and gross plant expenditures covering all types of plant. Table 10.2 shows transmission system data. Each set of tables contains segments for each of the regional Bell operating companies (along with Verizion's GTE companies shown separately) with aggregated summary data for all the reporting companies. The data summarized for each holding company reflect the aggregate of data filed for individual states or study areas and should be useful in assessing overall trends. In some cases, refiled data may cause values to differ from prior summary reports. Recent data reflect mergers of GTE and Bell Atlantic, which are now under the name Verizon Communications, and the acquisitions by SBC of Ameritech and Pacific Telesis.

Description of the Technologies and Analysis of the Data

The data in the attached tables provide a historical series for a variety of plant elements that illustrate the deployment of technology in the networks of the major local exchange carriers.[7] The data items provide a picture of the well established technologies in use. This report highlights key trends in the evolution of basic telecommunications infrastructure and illustrates the replacement of older technologies with newer ones. In some cases, older technologies either no longer exist or are in very limited use. This report reflects recent revisions to the ARMIS 43-07 report from which the data in this summary are obtained.[8]

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5 See footnote 1.

6 To access ARMIS data from <www.fcc.gov/wcb/eafs> click on the words "run the application primary link and select the desired report, table and row(s)." To access data instructions and definitions applicable to the 43-07 report click on the words ARMIS site map at the top right of the screen and then select the 43-07 report and table desired.

7 A number of irregularities including time series anomalies were noted in the data. The companies are typically notified of these observed problems and either file revisions or explanations. Revisions are initially made available on the ARMIS database website noted above.

8 *2000 Biennial Regulatory Review – Comprehensive Review of the Accounting Requirements and ARMIS Reporting Requirements for Incumbent Local Exchange Carriers: Phase 2; Amendments to the Uniform System of Accounts for Interconnection;*

**Table 10.2**
**Transmission System Data**
**BellSouth Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sheath Kilometers | | | | | | | | | | | |
| Total Sheath Kilometers | 979,751 | 993,633 | 1,005,397 | 1,020,809 | 1,034,601 | 1,050,186 | 1,074,896 | 1,094,569 | 1,115,897 | 1,134,363 | 1,145,506 |
| Copper | 921,509 | 927,265 | 930,812 | 937,626 | 943,090 | 951,758 | 965,108 | 973,995 | 983,221 | 989,541 | 992,446 |
| Fiber | 56,692 | 65,100 | 73,370 | 82,012 | 90,093 | 96,852 | 105,335 | 116,507 | 129,209 | 141,356 | 149,609 |
| Other | 1,550 | 1,268 | 1,215 | 1,171 | 1,418 | 1,576 | 4,453 | 4,067 | 3,466 | 3,466 | 3,452 |
| Interoffice Working Facilities | | | | | | | | | | | |
| Total Circuit Links | 2,702,141 | 2,935,085 | 4,287,654 | 4,756,430 | 5,245,925 | 6,107,816 | 6,134,728 | 8,564,658 | 9,828,726 | 10,690,256 | 10,835,682 |
| Loop Plant -- Central Office Terminations | | | | | | | | | | | |
| Total Equipped Channels | 31,742,421 | 33,070,338 | 34,669,704 | 36,022,283 | 37 866,890 | 39,550,588 | 40,957,871 | 42,025,575 | 49,435,188 | 51,061,973 | 39,822,163 |
| Copper | 28,821,672 | 29,291,200 | 29,995,720 | 30,351,794 | 30,903,216 | 31,270,774 | 31,917,878 | 31,849,537 | 37,493,164 | 38,176,168 | 30,263,142 |
| Fiber Digital Carrier | 2,919,937 | 3,778,341 | 4,673,140 | 5,669,647 | 6,962,832 | 8,278,972 | 9,039,151 | 10,175,104 | 11,940,618 | 12,883,709 | 9,557,876 |
| Other | 812 | 798 | 842 | 842 | 842 | 842 | 842 | 934 | 1,406 | 2,096 | 1,145 |
| Total Working Channels | 20,196,488 | 21,275,558 | 23,284,636 | 24,682,894 | 26,230,400 | 27 921,162 | 29,836,968 | 30,422,706 | 33,655,481 | 34,114,639 | 25,039,974 |
| Copper | 17,874,950 | 18,288,532 | 19,283,574 | 19,871,262 | 20,318,019 | 20,708,890 | 21,233,672 | 21,237,643 | 22,044,514 | 21,597,814 | 17,250,216 |
| Fiber Digital Carrier | 2,321,451 | 2,986,937 | 4,000,986 | 4,811,550 | 5,912,292 | 7,212,190 | 8,603,214 | 9,184,935 | 11,610,551 | 12,516,193 | 7,789,007 |
| Other | 87 | 90 | 77 | 82 | 89 | 82 | 82 | 128 | 416 | 632 | 751 |
| Other Transmission Facility Data | | | | | | | | | | | |
| Copper Pairs Term Main Frame (Loop Plant Only) | 26,382,231 | 26,433,408 | 26,451,200 | 26,527,293 | 26,342,776 | 26,703,438 | 27,082,625 | 26,602,864 | 31,771,617 | 32,464,246 | 26,813,386 |
| Fiber Strands Term in the CO (Loop Plant Only) | 52,591 | 59,663 | 73,260 | 106,710 | 138,364 | 157,957 | 185,416 | 205,840 | 226,360 | 248,433 | 310,092 |
| Fiber Term at Customer Premises DS1 Rate | 4,681 | 9,078 | 13,941 | 19,132 | 27,482 | 36,911 | 50,431 | 67,886 | 85,205 | 93,687 | 593,755 |
| Fiber Term at Customer Premises DS3 Rate & Higher | 5,490 | 3,294 | 4,034 | 4,559 | 5,353 | 6,847 | 8,974 | 35,492 | 94,022 | 107,998 | 112,931 |
| ISDN Capable Lines | NA | NA | NA | NA | NA | 25,918,582 | 15,841,265 | 13,049,642 | 13,111,821 | 12,636,844 | 16,230,309 |

NA Not available

Source ARMIS Report 43-07

Although the overall level of growth in fiber has been high, its use in the local loop at present appears to be relatively small. The reporting companies included in this report had an installed base of about 215 million copper-pair mainframe terminations in their central offices for local loop use in 2002. In comparison, about 3 million fiber loop central office terminations had been installed by end-of-year 2002. The data show that the number of these terminations actually declined by about 8.6% during 2002 as compared to an increase of over 13% in 2001. In 2002 more modest growth in DS-3 terminations on fiber facilities is evident as compared to prior years. Over the longer term, fiber and hybrid copper/fiber systems will likely become increasingly important in the local loop as the number of high-quality copper pairs available to support higher data rate digital services declines.

As noted earlier, the data presented in this report do not include data associated with hybrid fiber/copper interfaces including information on offerings of xDSL services for which the companies requested proprietary treatment.[11] Nonetheless the number of ISDN capable lines can be used as an upper bound for potential broadband availability over copper loops, since copper loop characteristics necessary to support ISDN services are also required for newer xDSL services.[12] Readers interested in more disaggregated information may wish to examine data at a more localized level than presented here.[13]

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(authored by J. Kraushaar, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission).

11 xDSL (Digital Subscriber Loop) services that are now available offer broadband digital capability using special terminal equipment that enhances the capability of existing copper access lines.

12 Table 10.1 includes the number of switch terminations that are available for ISDN and ISDN capable lines. Table 10.2 includes the number of copper loops that are capable of supporting ISDN.

13 Individual study-area data are also available to address more localized issues. This information is available from the ARMIS web page at <www.fcc.gov/wcb/eafs/>.

**Table 10.1**
**Switching Data**
**Verizon - GTE Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Switches | 6,597 | 6,731 | 6,155 | 6,274 | 6,499 | 6,453 | 6,538 | 6,659 | 5,136 | 5,190 | 4,423 |
| Tandems | 162 | 158 | 143 | 157 | 166 | 165 | 162 | 164 | 150 | 151 | 136 |
| Hosts | 924 | 955 | 849 | 884 | 929 | 939 | 955 | 945 | 742 | 761 | 652 |
| Remotes (Stand Alone Only) | 1,558 | 1,732 | 1,767 | 2,031 | 1,925 | 1,960 | 2,738 | 2,861 | 2,088 | 2,134 | 2,100 |
| Total Switches | 6,632 | 6,769 | 6,172 | 6,291 | 6,520 | 6,483 | 6,604 | 6,691 | 5,174 | 5,235 | 4,462 |
| Analog Stored Program Control | 83 | 78 | 46 | 26 | 17 | 10 | 0 | 0 | 0 | 0 | 0 |
| Digital Stored Program Control | 5,209 | 5,494 | 5,192 | 5,586 | 6,109 | 6,305 | 6,604 | 6,691 | 5,174 | 5,235 | 4,462 |
| Total Number Access Lines in Service (000) | 15,781 | 16,274 | 16,064 | 16,641 | 17,393 | 18,321 | 19,105 | 20,015 | 18,709 | 18,503 | 16,894 |
| Analog Stored Program Control Lines Served | 1,030 | 834 | 508 | 378 | 242 | 197 | 0 | 0 | 0 | 0 | 0 |
| Digital Stored Program Control Lines Served | 13,491 | 14,357 | 14,759 | 15,731 | 16,866 | 17,966 | 19,105 | 20,015 | 18,709 | 18,503 | 16,894 |
| Total Switches Equipped w/SS7-394 (InterLATA) Svc | 1,499 | 2,034 | 2,250 | 2,930 | 3,897 | 4,215 | 5,527 | 6,309 | 5,021 | 5,156 | 4,429 |
| Total Switches Equipped with ISDN | 218 | 272 | 270 | 390 | 523 | 779 | 1,246 | 1,385 | 884 | 913 | 949 |
| Lines with Access to ISDN (000) | 1,399 | 2,095 | 5,003 | 6,249 | 9,678 | 10,619 | 14,574 | 14,926 | 14,064 | 13,830 | 13,320 |
| Basic Rate ISDN (BRI) Interfaces Equipped | 22,763 | 30,741 | 63,012 | 91,326 | 98,145 | 126,946 | 139,471 | 167,964 | 173,507 | 173,220 | 169,320 |
| Primary Rate ISDN (PRI) Interfaces Equipped | 475 | 896 | 1,406 | 2,703 | 7,377 | 16,465 | 36,386 | 47,588 | 62,652 | 70,524 | 69,281 |

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**Table 10.1**
**Switching Data**
**BellSouth Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Switches | 1,664 | 1,661 | 1,658 | 1,647 | 1,650 | 1,654 | 1,653 | 1,649 | 1,644 | 1,642 | 1,637 |
| Tandems | 66 | 70 | 70 | 71 | 70 | 70 | 71 | 71 | 73 | 77 | 77 |
| Hosts | 272 | 269 | 280 | 289 | 297 | 317 | 307 | 306 | 297 | 304 | 305 |
| Remotes (Stand Alone Only) | 703 | 714 | 732 | 742 | 747 | 766 | 765 | 765 | 776 | 819 | 829 |
| Total Switches | 1,678 | 1,680 | 1,677 | 1,668 | 1,670 | 1,674 | 1,673 | 1,668 | 1,665 | 1,665 | 1,664 |
| Analog Stored Program Control | 283 | 236 | 182 | 158 | 130 | 106 | 100 | 83 | 69 | 54 | 44 |
| Digital Stored Program Control | 1,395 | 1,444 | 1,495 | 1,510 | 1,540 | 1,568 | 1,573 | 1,585 | 1,596 | 1,611 | 1,620 |
| Total Number Access Lines in Service (000) | 18,607 | 19,233 | 20,141 | 21,064 | 22,019 | 23,080 | 23,909 | 24,458 | 24,558 | 23,756 | 22,955 |
| Analog Stored Program Control Lines Served | 7,173 | 5,929 | 4,837 | 4,455 | 4,020 | 3,746 | 3,536 | 2,972 | 2,362 | 1,729 | 1,309 |
| Digital Stored Program Control Lines Served | 11,434 | 13,304 | 15,304 | 16,609 | 17,999 | 19,334 | 20,373 | 21,486 | 22,197 | 22,027 | 21,646 |
| Total Switches Equipped w/SS7-394 (InterLATA) Svc | 966 | 1,447 | 1,627 | 1,629 | 1,652 | 1,674 | 1,673 | 1,668 | 1,665 | 1,665 | 1,664 |
| Total Switches Equipped with ISDN | 224 | 324 | 407 | 467 | 518 | 584 | 596 | 645 | 691 | 678 | 697 |
| Lines with Access to ISDN (000) | 4,934 | 7,606 | 9,708 | 10,988 | 12,948 | 14,894 | 15,980 | 17,413 | 18,396 | 17,660 | 17,457 |
| Basic Rate ISDN (BRI) Interfaces Equipped | 50,774 | 65,607 | 76,348 | 80,641 | 122,043 | 167,512 | 183,458 | 202,391 | 223,294 | 228,898 | 230,066 |
| Primary Rate ISDN (PRI) Interfaces Equipped | 559 | 1,814 | 3,534 | 4,803 | 9,154 | 21,389 | 33,564 | 51,669 | 72,347 | 85,983 | 81,328 |

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**Table 10.1**
**Switching Data**
**SBC Southwestern Bell Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Switches | 1,392 | 1,437 | 1,511 | 1,644 | 1,670 | 1,690 | 1,644 | 1,658 | 1,663 | 1,660 | 1,652 |
| Tandems | 67 | 64 | 60 | 60 | 60 | 60 | 67 | 56 | 69 | 70 | 70 |
| Hosts | 191 | 230 | 233 | 245 | 241 | 267 | 230 | 228 | 229 | 230 | 244 |
| Remotes (Stand Alone Only) | 488 | 672 | 779 | 935 | 1,077 | 1,077 | 1,158 | 1,163 | 1,152 | 1,150 | 1,150 |
| Total Switches | 1,425 | 1,469 | 1,539 | 1,679 | 1,730 | 1,750 | 1,711 | 1,727 | 1,715 | 1,716 | 1,722 |
| Analog Stored Program Control | 348 | 308 | 264 | 252 | 162 | 136 | 115 | 88 | 67 | 46 | 34 |
| Digital Stored Program Control | 855 | 1,078 | 1,202 | 1,369 | 1,568 | 1,614 | 1,596 | 1,639 | 1,648 | 1,670 | 1,688 |
| Total Number Access Lines in Service (000) | 12,693 | 13,180 | 13,611 | 14,095 | 14,104 | 15,306 | 15,872 | 16,287 | 16,411 | 15,842 | 15,294 |
| Analog Stored Program Control Lines Served | 7,455 | 7,078 | 6,608 | 6,531 | 5,657 | 5,055 | 4,119 | 3,107 | 2,246 | 1,448 | 963 |
| Digital Stored Program Control Lines Served | 4,924 | 6,000 | 6,907 | 7,502 | 8,447 | 10,251 | 11,753 | 13,180 | 14,165 | 14,394 | 14,331 |
| Total Switches Equipped w/SS7-394 (InterLATA) Svc | 607 | 723 | 1,263 | 1,466 | 1,597 | 1,724 | 1,707 | 1,724 | 1,713 | 1,713 | 1,722 |
| Total Switches Equipped with ISDN | 92 | 92 | 123 | 303 | 331 | 331 | 360 | 428 | 441 | 461 | 472 |
| Lines with Access to ISDN (000) | 1,964 | 1,476 | 1,933 | 8,826 | 9,440 | 10,577 | 13,361 | 12,158 | 12,169 | 12,056 | 11,241 |
| Basic Rate ISDN (BRI) Interfaces Equipped | 88,960 | 88,960 | 57,041 | 108,784 | 104,604 | 185,018 | 225,427 | 267,190 | 281,459 | 310,326 | 308,501 |
| Primary Rate ISDN (PRI) Interfaces Equipped | 380 | 410 | 1,238 | 5,084 | 6,150 | 15,434 | 31,570 | 46,533 | 59,513 | 68,236 | 68,793 |

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**Table 10.1**
**Switching Data**
**SBC Ameritech Companies**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Switches | 1,433 | 1,422 | 1,413 | 1,415 | 1,410 | 1,435 | 1,419 | 1,432 | 1,447 | 1,451 | 1,455 |
| Tandems | 46 | 47 | 47 | 46 | 46 | 47 | 51 | 52 | 53 | 55 | 63 |
| Hosts | 178 | 230 | 236 | 238 | 236 | 243 | 236 | 234 | 234 | 235 | 236 |
| Remotes (Stand Alone Only) | 666 | 684 | 717 | 731 | 743 | 769 | 764 | 775 | 790 | 789 | 790 |
| Total Switches | 1,473 | 1,469 | 1,460 | 1,461 | 1,456 | 1,482 | 1,470 | 1,485 | 1,500 | 1,506 | 1,518 |
| Analog Stored Program Control | 318 | 224 | 119 | 97 | 71 | 58 | 46 | 39 | 37 | 34 | 24 |
| Digital Stored Program Control | 1,155 | 1,245 | 1,341 | 1,364 | 1,385 | 1,424 | 1,424 | 1,446 | 1,463 | 1,472 | 1,494 |
| Total Number Access Lines in Service (000) | 16,887 | 17,500 | 18,122 | 19,310 | 19,553 | 20,335 | 20,790 | 21,036 | 20,898 | 20,074 | 19,151 |
| Analog Stored Program Control Lines Served | 7,898 | 5,862 | 3,845 | 3,727 | 3,228 | 2,793 | 2,193 | 1,811 | 1,730 | 1,491 | 927 |
| Digital Stored Program Control Lines Served | 8,988 | 11,638 | 14,278 | 15,583 | 16,324 | 17,541 | 18,597 | 19,225 | 19,168 | 18,583 | 18,224 |
| Total Switches Equipped w/SS7-394 (InterLATA) Svc | 646 | 1,001 | 1,254 | 1,400 | 1,438 | 1,463 | 1,451 | 1,476 | 1,492 | 1,496 | 1,504 |
| Total Switches Equipped with ISDN | 181 | 387 | 444 | 489 | 601 | 695 | 784 | 816 | 822 | 844 | 933 |
| Lines with Access to ISDN (000) | 3,839 | 8,056 | 10,259 | 12,860 | 13,802 | 15,464 | 16,804 | 17,472 | 17,388 | 16,814 | 16,810 |
| Basic Rate ISDN (BRI) Interfaces Equipped | 56,352 | 67,415 | 87,862 | 97,550 | 226,355 | 180,280 | 220,867 | 259,312 | 271,468 | 283,600 | 290,367 |
| Primary Rate ISDN (PRI) Interfaces Equipped | 728 | 707 | 1,505 | 1,677 | 4,247 | 14,569 | 24,800 | 38,037 | 53,926 | 70,542 | 75,184 |

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